AMERICAN

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All of us in the telephone business are grateful for your fine spirit of co-operation in this war emergency.

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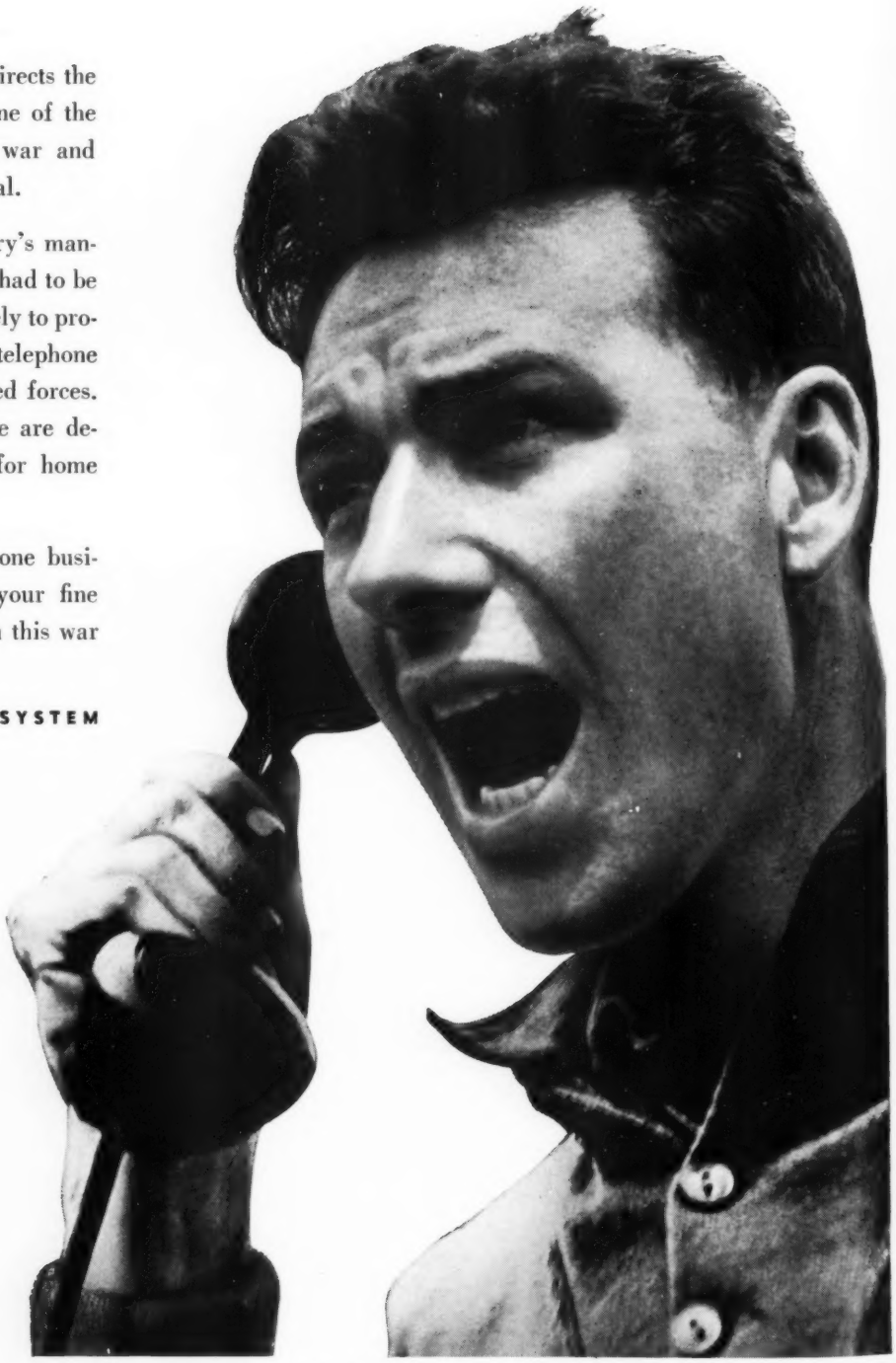

The big guns start booming when the section chief of a cannon company gives the order to "fire"

AMERICAN FORESTS

VOLUME 50 SEPTEMBER, 1944 NUMBER 9

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OVID BUTLER

Editor
ERLE KAUFFMAN

Associate Editor
LILIAN CROMELIN

CONTENTS

	Page
CONSERVATION COMMUNIQUES	418
EDITORIAL On With the Quetico-Superior Project!	423
THE ANTHRACITE REGION DISCOVERS ITS "SURFACE" By Reginald D. Forbes	424
HANDS ACROSS THE BORDER By Ernest C. Oberholtzer	428
OVER THE PASS By Claude Kreider	432
A FORESTER VISITS PARICUTIN By Austin F. Hawes	435
THE MORMON CRICKET WAR By John Clark Hunt	438
THE FORESTS OF RHODE ISLAND By P. L. Buttrick	440
CANADA'S PLAN FOR THE POSTWAR TOURIST By James Montagnes	443
MASTER FOREST FARMER By J. A. Cope	444
ALBINO BUFFALO By Peyton Moncure	446
TREE TRAILS	448
HERBERT SMITH, FOREST PIONEER, DIES By Henry S. Graves	450
BOOKS AND PUBLICATIONS	452

THE COVER

The Woods Camp at Twilight
Western Ways Photo, by Livingston

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American Forests

Published monthly by

THE
AMERICAN FORESTRY
ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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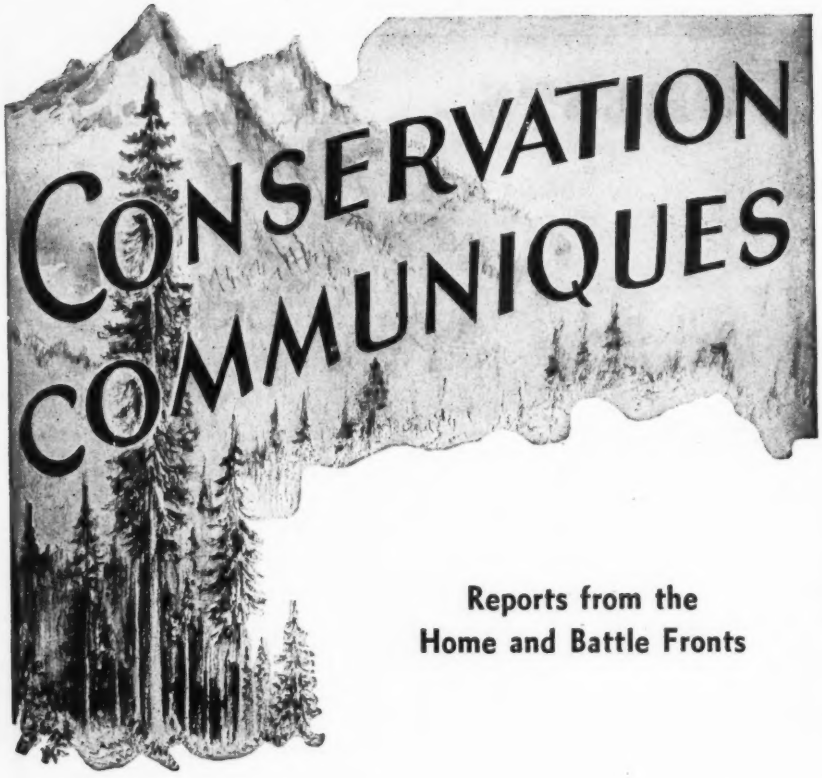

Reports from the Home and Battle Fronts

WPB has announced that tighter control over the production and usage of paper will be exercised by the government unless the paper industry voluntarily cooperates in producing military and essential civilian needs, increasing appreciably with the tempo of the war. This means, it was indicated, complete priority control of paper or that the industry will be subjected to over-all directives by the Army.

• • • •

Fuel supplies of wood will remain tight through 1944 and into 1945, the U. S. Forest Service has reported. Against a requirement total of 71,000,000 cords, no more than 60,000,000 cords, perhaps less, will be produced, it is predicted. Lack of manpower, transportation problems and difficulty in obtaining machinery, notably power-driven saws, are given as the reasons.

• • • •

Restrictions on the use of balsa lumber, one of the most critical species for the past two years, have been relaxed by the WPB. The reason—decline in military requirements. Used for life rafts, life floats and aircraft plywood, balsa is imported from the tropics, chiefly from Ecuador. Production reached a peak of 35,000,000 board feet in 1943 as compared with an annual prewar figure of 5,000,000 feet.

• • • •

The fur catch in the United States and Alaska was worth $100,000,000 last year, according to the annual survey of the U. S. Fish and Wildlife Service. Around 20,000,000 animals were taken by trappers. Louisiana, Minnesota, Wisconsin, North Dakota, Michigan, Maryland and Pennsylvania, in the order named, were the most productive states.

• • • •

A postwar forest plan suggested for India by the Inspector General of Forests proposes that wooded areas be increased to twenty-five percent of the total area of each province and state as a flood-control measure and as a means of increasing afforestation in the dry belt of western India. A secondary aim is the provision of timber and fuel wood for agricultural villages. It is estimated that the project will require the planting of trees on an additional 100,000 square miles of land. Forests now total 106,000 square miles, or thirteen percent of the area of British India.

• • • •

The Democratic platform contained but two brief paragraphs on conservation: "We endorse the President's statement recognizing the importance of the use of water in arid-land states for domestic and irrigation purposes," and as a postwar program "Encouragement of . . . development of natural resources in the West and other parts of the country." (See August issue for conservation in Republican platform.)

• • • •

What is reported to be the largest wood carbonization plant in Sweden is now being erected at Hogforsbruk. It will produce chiefly charcoal for use in gas generators, but equipment is also being installed for the recovery of wood tar, pyroligneous acid, and other by-products. Annual charcoal production capacity of the plant will be 825,000 bushels.

• • • •

Mexico plans to spend $16,000,000 this year to bring new land under cultivation by further extending its irrigation program, begun in 1941. When the program is completed, possibly by 1947, the total irrigated area in that country will exceed 3,000,000 acres, and estimates are that it will benefit 1,000,000 people.

• • • •

The Japanese government, it is reported, plans to construct two large paper factories in French Indo-China. One will use timber as its primary raw material, and the other will utilize such native materials as rushes and bamboo. At present there is only one paper factory in the entire area, and it supplies approximately one-ninth of the country's normal requirements.

• • • •

In a move to popularize use of its tasty meat, Governor James H. Davis of Louisiana in July signed a bill changing the name of the muskrat. From now on, look for it on your menu as "marsh hare."

• • • •

More than 10,000,000 cinchona trees are estimated to be growing in Ecuador—a figure which assures a quinine production of vast importance to that country and to all the United Nations. The estimate was made on the findings of fifteen investigating expeditions which explored the country's cinchona resources last year.

• • • •

A shoe factory in Vilna in the Polish-Lithuanian border region, is reported by the German controlled press to be using cheap grades of firewood in the manufacture of wooden-soled footwear for the civilian population of the "eastern occupied area."

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In this dealer's repair shop, every kind of "Caterpillar" equipment receives the attention it needs in the hands of skilled mechanics. ▼

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Have your "Caterpillar" service-dealer go over your equipment *now*—for inspection, adjustments, and replacement or repair of worn parts. In this way, not only can your operating costs be kept at a minimum, but the life of the equipment can, most likely, be prolonged by thousands of hours.

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THE FOREST EXCHANGE . . .

Making the Nazis Pay

SIR: In your July issue an article by George Bois describes how the Germans have wasted the French forests and suggests that our American forests should supply France's coming wood shortage. Don't you think that it would be more reasonable to make German forests supply all the wood that the French need and at no expense? I feel that if it takes every stick of German timber to make good their thefts, they should suffer. If they are not forced to pay in every way to make good their devastations, how can we show them the error of their ways?—*Lawrence J. Mead*, Darien, Conn.

Lumbermen and Community Forests

SIR: Recently I spoke to a lumber manufacturer who owns several hundred thousand acres of forest land, suggesting that he dedicate some of his land to a permanent community forest which would not only grow timber but would furnish recreational outlets. With the return of our soldiers some of these community forests could be dedicated as memorial forests for our war heroes.

Lumbermen throughout the country own a lot of timberland and some of their mill towns are pretty miserable-appearing communities. They could brighten them up at relatively little expense by dedicating a few hundred acres or more to community forests which would serve the multiple use purposes of forests of this type.—*Nelson C. Brown*, New York State College of Forestry, Syracuse.

From Somewhere in England

SIR: From this island across the sea (England) I want to let you know that AMERICAN FORESTS is still reaching its destination. It is good to be able to relax for a few minutes, pick up the magazine, and read of the best parts of the U. S. Although the time for reading is short, I manage to read every page. Then I think of what the people of this land would think if they could ride from the Atlantic to the Pacific and see all the natural beauty of our land.

This island has many beautiful places and the main aid to this beauty is nature's own gift—the green fields with swiftly running streams or the quiet woods with many birds about. Nevertheless, I believe that any man interested in wildlife must really choose the United States for his home.—*Sgt. Thomas P. Meehan, Jr.*, Somewhere in England.

Appreciation

SIR: Recently I came into possession of your December 1942 issue of AMERICAN FORESTS and I have read it with much interest. I never knew of this magazine before, but will say it is all for the things I have always been interested in knowing about.—*Pvt. Abner W. Venable*, in the Pacific area.

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look it over...

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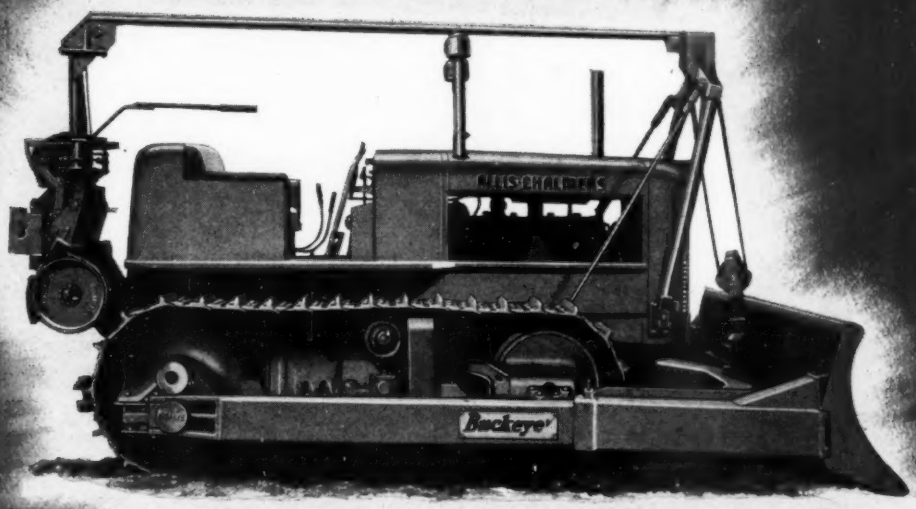

Single Point Suspension

This is the new Buckeye Cable Controlled 'Dozer that is setting higher standards of bulldozer and trailbuilder performance under the toughest possible operating conditions. Hour after hour, testing engineers put it through the most punishing operations with just one thought in mind—"Break the bulldozer". But it couldn't be done! The new Buckeye Dozer will roll larger yardage loads, punch out boulders, uproot huge trees and stumps, and do a hundred and one odd jobs better than you ever imagined possible.

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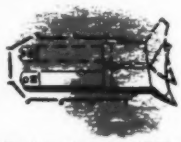
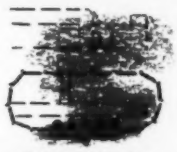
Now available for Allis-Chalmers and Cletrac Tractors. Write today for specification data.

Blade Easily Angled


Double Trunnion Tilting

Scientific Blade Curvature

Buckeye Cable Control


Balanced Design

BUCKEYE TRACTION DITCHER CO.
FINDLAY, OHIO

CENTRO-LIF Built by Buckeye

Editorial

ON WITH THE QUETICO-SUPERIOR PROJECT!

IN THE ten years preceding the outbreak of the present war, one of the most popular and worthy adventures in the conservation field was known as the Quetico-Superior Project. Not in many years had a proposal in so short a time gathered such widespread support by men, women and organizations throughout the country. By virtue of its inspiring objectives and its intrinsic worth the proposal during these prewar years became a concrete undertaking and was slowly but surely surmounting obstacles in its path and moving toward accomplishment.

Then came the war and like most other non-military conservation activities the project passed into the background of public thought and action. The war years, however, have in no way altered the merits of the project or the public desirability of its accomplishment. On the contrary they are serving to emphasize the urgency of its early completion and now that military victory seems definitely in sight, it is none too soon to bring the Quetico-Superior sharply back into the public mind as a conservation undertaking that needs finishing just as soon as peacetime conditions permit.

To this end, AMERICAN FORESTS presents in this issue under the title "Hands Across the Border" a full statement of the purpose, scope and present status of the project. In doing so, the editors wish to pay tribute to the author, Ernest C. Oberholtzer, who, through unselfish and untiring efforts both as an individual and an officer of the Quetico-Superior Council, has done more than any other single person to hold the project to its course and to lead it forward.

In the history of American conservation there has never been an undertaking quite like the Quetico-Superior. The particular feature which sets it apart is that it represents a joint effort by the people of Canada and the United States to preserve for their common use, enjoyment and inspiration a natural heritage of wilderness lakeland that binds them together geographically. The area involved lies in the Rainy Lake watershed which embraces boundary waters and tributary lakes and forests in northern Minnesota and southern Ontario. In this ten million acre watershed lies the finest wilderness lakeland remaining in North America that is easily accessible both to the people of Canada and the United States.

The Quetico-Superior plan would preserve the wilderness character of the region and its pristine resources of lakes, streams, forests and wildlife not by locking them up but by a mutuality of conservation management provided for by a "hands across the border" compact entered into by the two countries. In brief, the Quetico-Superior upon completion would be a great international forest and park serving both social and economic needs of the two nations in perpetuity.

Another distinguishing feature is that the Quetico-Superior reservation once established as planned would stand as an international forest memorial to the service men of both countries who fought as comrades in World War I. This proposal came first from the American Legion in 1929, ten years before the outbreak of the present war. Now men and women of Canada and the United States have served and suffered side by side not in one but in two great world conflicts. They have fought together in skies, on seas and in lands pretty much all over the world, and for the common right of both their nations to remain free and secure. Many will have spent the full measure of their lives and of those who do return to their native lands all will bear in some measure mental or physical scars of war.

When the war is over the people of both nations who perforce have remained behind striving to keep their governments, industries, churches — all their finer institutions—worthy of the fight and the fighters, will feel a common surge to commemorate in a fully adequate and lasting way the service and sacrifice of their sons and daughters. As an international memorial, the Quetico-Superior therefore has taken on new and larger meaning. What better way could the people of the two countries jointly express their gratitude to fighting comrades in two world wars than by preserving for all time an everliving symbol of the wilderness environment from which both countries have derived their strength and bigness?

Much remains to be done to complete the project. Public support in Canada, for one thing, is not as widespread or as aroused as in this country and leaders across the line have an important task in that field. On our side, the State of Minnesota recently placed restrictions on rounding out the reservation through federal acquirement of additional lands needed. These differences need to be composed. That done, there is the question of postwar funds with which to complete the land program. And, finally, there is the formal compact or treaty to be entered into by the two countries.

The American Forestry Association among others was one of the early organizations to sponsor the Quetico-Superior plan. Through the intervening years it has steadfastly supported it and worked for its accomplishment. Fifteen years ago, AMERICAN FORESTS expressed editorially the conviction that the plan to set apart the Rainy Lake country as an international forest carries with it so many human benefits to present and future generations of Americans that it merits the fighting support of the public on both sides of the line. In the light of postwar needs brought into sharp relief by the human havoc of the present conflict, our conviction today is all the stronger. So, let's on with the completion of the Quetico-Superior project.

Amazing contrasts are found in the scenic aspect of the anthracite region. Natural beauty abounds, as in the forested approach to a small church above, while the bleak, scarred surface in the companion picture shows the incredible accumulation of refuse due to anthracite mining nearby

THE ANTHRACITE REGION DISCOVERS ITS "SURFACE"

By R. D. FORBES

An Intimate Story of the Awakening of Forestry in Northeastern Pennsylvania from Which the Nation Obtains Its Hard Coal

A typical pile of mine props, essential to the industry

FORESTRY has come to the woods of the hard coal region of Pennsylvania. Here, within the last few months, some 2,000,000 board feet of timber, in thirty private properties, have been cut under forestry principles, and more than twice that quantity has been "cruised" as a first step toward forest management.

The anthracite forest region may be conveniently described as the fifteen counties in the northeastern corner of Pennsylvania, which contain or surround deposits of hard coal, or anthracite. Because these deposits have been, and still are, immensely valuable, the eyes of this territory have for seventy-five years been directed almost exclusively below ground. In order to acquire not only coal, but also access to it, the coal companies generally found it necessary to buy the land above their veins. Whatever its condition—forest or farmland, stream-bed or city—this land is known to its owners by one name: "surface."

How little consideration is given to most of the "surface" is illustrated by a conversation I had not long ago with the manager of one large coal company. I asked him: "How much 'surface' does your company own?" A bit surprised to be questioned about a matter so inconsequential, he answered: "Oh, I don't know. It's mostly woods. Ten thousand acres, perhaps." Then, seeing that I was really interested, he telephoned a subordinate and repeated my question. The subordinate did not know the acreage either, but would call back. In due time came his answer: "Fifteen thousand acres"—a mere fifty percent over the manager's guess!

No area of comparable extent offers greater contrasts in forest conditions than the anthracite forest region. On the Pocono Plateau, which Dr. Isaiah Bowman describes as "a nearly level upland wilderness, known to the early settlers as the 'Great Beech Woods' and the 'Shades of Death,' the beech over thousands of acres is gone, along with the great hemlocks, white pine and maple. In their place are thickets of scrub oak, laurel, and grey birch, hospitable only to the deer. From his tower on Pohopoco Knob the fire lookout sees for miles no other tree than an occasional pitch pine emerging from the brush. Equally dreary to the forester and tree lover are many a ridge and hillside in the more southernly counties of the region. There, a dozen saplings lashed into a makeshift hoist over most "bootleg" coal mines are pitiful evidence few trees reach usable size before being seared by periodic forest fires.

In happy contrast to the scrub oak areas are the scattered remnants of almost undisturbed original forest. One of these, at the foot of towering North Mountain in Luzerne County, is Ricketts Glen, recently bought as a state park. Here sugar maple, yellow birch, beech, and hemlock overshadow Kitchen's Creek as it plunges down a series of waterfalls. One almost hesitates to name the location of other, smaller remnants of virgin growth, lest they be sacrificed on the altar of war. They include the white pine at Bear Creek, a residential area a few miles outside Wilkes-Barre in Luzerne County. But most of them are farm woods, well distributed through the region.

Wide variety in forest conditions seems natural to a region where wealth and poverty dwell side by side, and man-made ugliness alternates with breath-taking natural beauty. A railroad journey from Bethlehem, just outside the region, to Wilkes-Barre in its heart, illustrates the contrasts. Just below Mauch Chunk the train enters the magnificent gorge of the Lehigh River. Dizzy cliffs rise almost sheer from its winding shore, except where some tumbling trout stream joins it and allows a glimpse back to the surrounding plateau. Logging and fires long since destroyed the noble forest that once clothed these rugged slopes, but in the spring they are still pink with laurel and azalea, and in the autumn brave with more brilliant colors.

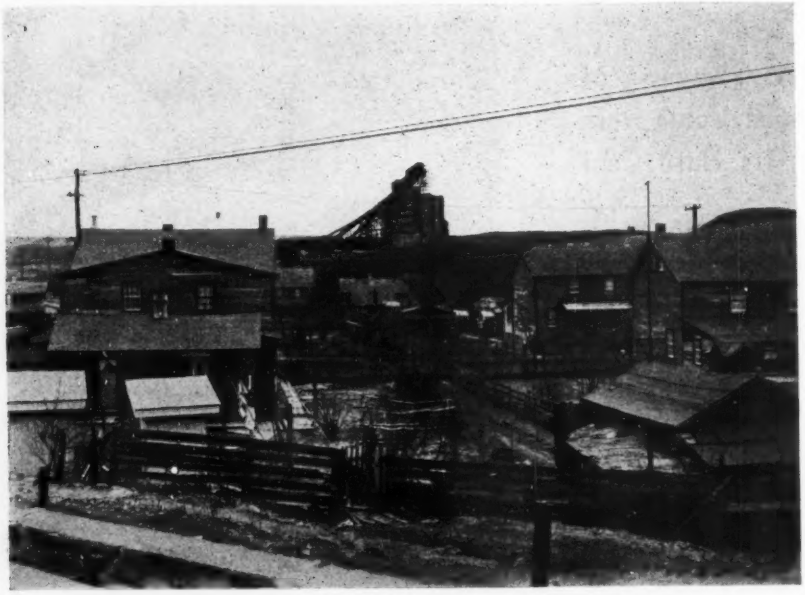
There is no highway either along or across the gorge for twenty-five miles, because two railroads have preempted the only traversible ground. If they did not use opposite sides of the gorge most of the way, travelers on either railroad might imagine themselves in a wilderness all the way from Mauch Chunk to White Haven. For the upper two-thirds of its course the river runs as clear and beautiful as the first white man found it, but the lower third is black as ink from the coal dust that chokes a tributary.

Beyond White Haven the route is just below the plateau top, and a century of fires has not quite destroyed the beauty of wind-swept slopes and placid little waters. At Mountain View, if it is a clear day, the traveller gasps at the woodland beauty of the plateau as it dips gently to a distant lake, and on the horizon looms North Mountain. Then begins the descent. Within a mile or two there is a swift glimpse of the Susquehanna River, and on its banks the city of Wilkes-Barre. By two long switchbacks, through almost unbroken woods, the train descends 600 feet to the valley.

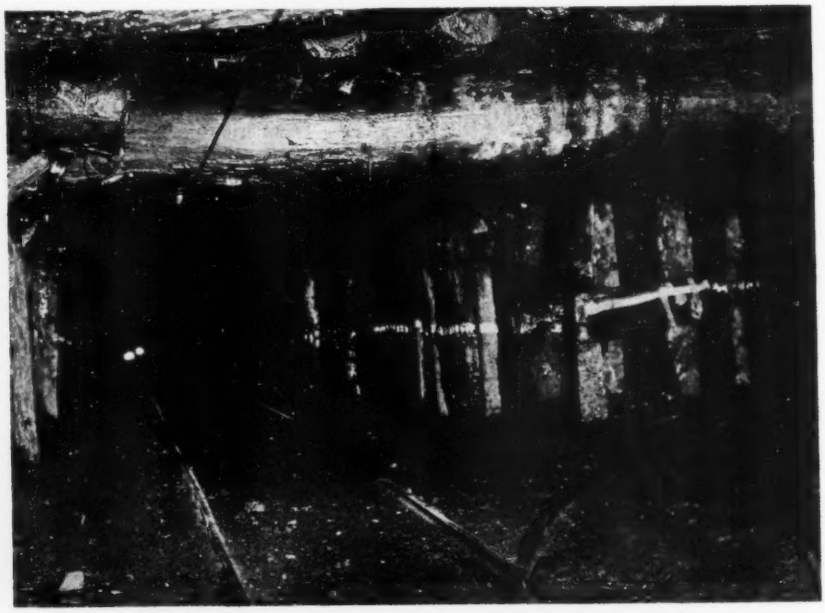
Here all nearby beauty ceases. Incredible piles of mine refuse mar the

view in every direction. And at the very edge of these man-made mountains rise the dwellings of the miners. Coal dust blackens the wash hung out to dry in dingy backyards, and grimy men wearing the illuminated cap of the miner trudge wearily home. The knowledge that entire cities of the anthracite region were built over coal deposits now honeycombed with tunnels and shafts, intensifies the depression of the traveler. Every week local newspapers report roads or buildings endangered by subsidence of the ground, and from time to time even metropolitan dailies headline the loss of life in ghastly cave-ins.

Not far away, in secluded spots unspoiled by industrial devastation, amid stately trees that are this region's birthright, are the homes of those who direct the mining enterprise. And in distant cities is many an institution of learning or mercy which was built from the royalties that in the heyday of anthracite poured from these drab communities in a golden stream. In the recent words of Raymond Gram Swing, "the coal industry is indeed the orphan of the capitalist system!"



Backed up to the mines, at the edge of the man-made mountains of waste, rise the dwellings of the miners



This entrance and haulage-way shows how much structural lumber is used for lining with props and lagging

If these matters appear irrelevant to the story of forestry in the anthracite forest region, it is only necessary to point out how intimately the future of the forest resource is bound up with that of the mineral resource. Coal cannot be mined without wood. Every one of the countless chambers, level below level, through which the veins are reached, is lined with wooden props. These are from four to eight inches in diameter, and their length varies with the height of the chamber. In the ordinary temporary mine tunnel props are erected in pairs at six or eight-foot intervals, and each pair is connected by a cross-piece of similar material. They do not so much "hold up the mountain," even temporarily, as they provide support for both ceiling and sidewalls to prevent loose rock fragments from falling into the tunnel.

The ceiling and walls are of wooden poles—called lagging—of smaller diameter than the props. Props and lagging are "round." They are cut from small trees and placed in the mines without sawing or surfacing of any kind, except as they are notched and fitted into effective structural units. Among all his other skills, the coal miner must know how to apply adz and saw to this fitting.

If in 1944 the hard coal industry of Pennsylvania mines 66,000,000 tons—its goal in 1943—it will need 29,000,000 cubic feet of round wood. But this is by no means all the wood the industry will use. Two-thirds more will be needed in the form of lumber and other sawed products. The temporary rails over which the miner pushes his cars up to the "face," or vein of coal, are often of sawed wood. Lumber is used for brattices—ventilators—which renew the air at the face, and for chutes which direct the fall of coal shot down in vertical veins. Lining the main chambers of the mine, which may be kept open for years and are chiefly supported by solid pillars of unmined coal or rock, are props up to sixteen inches in cross section, generally sawed. Some mine cars are built of wood, and much lumber is used in miscellaneous ways in every mine.

Paradoxically, the coal industry's use of small trees, which has hitherto been the chief cause of forest devastation, offers the main hope for intensive forestry in the region. Without a satisfactory market for the small trees which nature produces in prodigal numbers in every well-stocked forest, the forester has great difficulty in making the early

stages of forestry pay. European experience has shown that the final crop of timber in a well-managed forest does not generally exceed in quantity that produced by an unmanaged forest. But the European forester, having markets for even the smallest of trees in a wood-hungry land, from time to time thins the stand. He thus salvages the weaker trees, which would otherwise die and rot, and leaves the healthiest, straightest trees to grow to maturity at the maximum rate.

Wherever in America there are good markets for small trees, the forester can, by periodic thinnings, about double the volume of usable wood produced by the forest over a period of years. In order to do this, he must allow an adequate number of the best trees to reach sawtimber size.

The anthracite industry, without benefit of forestry, utilized the little trees in the forests that surround the mines, but left none to mature. The forest problem of the region therefore is how to make the favorable markets for small trees offered by the coal industry a stepping stone, rather than a major obstacle, to the development of wood-using industries which obtain their raw material from large trees.

If at last real progress is being made toward solving this problem, it is the culmination of many men's efforts over many years. The anthracite region proper, that is, the five counties which produce over ninety-five per cent of all the hard coal, has for forty years been one of the three most fire-ridden districts of the entire northeast. In late years it has absorbed nearly half of all the State of Pennsylvania's funds for fire fighting. The record would be worse, had not many of the ablest foresters of the State toiled here with brain and hand. The veteran State Firewarden, George Wirt; Lynn Emerick, present chief of the Division of Forests; H. A. Smith, later State Forester of South Carolina; and Henry Clepper, executive secretary of the Society of American Foresters, are among those who made early reputations in this "tough spot."

Unfortunately it has been made even tougher by politics, both state and local. The deadening hand of the spoils system has restrained eager men, inspired by professional enthusiasm, from selecting assistants, regardless of party or faction, as fire wardens. Again, the desire of some volunteer fire companies for jobs has actually abetted incendiarism. Until Pennsylvania defies the political bosses of both major parties and places the Department of Forests and Waters under the merit system of office tenure (civil service), Forest Enemy Number One will remain at large in the coal-producing counties. In all but two of the remaining counties of the anthracite region, fire has become a rarity.

Stimulated by the State's efforts, many of the coal companies, which own at least twenty-five percent of the surface of the main coal-producing counties, have intensified the campaign against fires. Some—among them the Glen Alden and the Hudson Coal Companies—have planted trees on a significant scale. The Anthracite Forest Protective Association, whose secretary was J. M. Sloan, for many years assessed the companies comprising it on an acreage basis for an educational campaign against fires, and for the erection of fire towers and other improvements to supplement those of the State. The plantations of the Lehigh Coal and Navigation Company have been notable for the effective use which the company's forester, A. C. Neumuller, has

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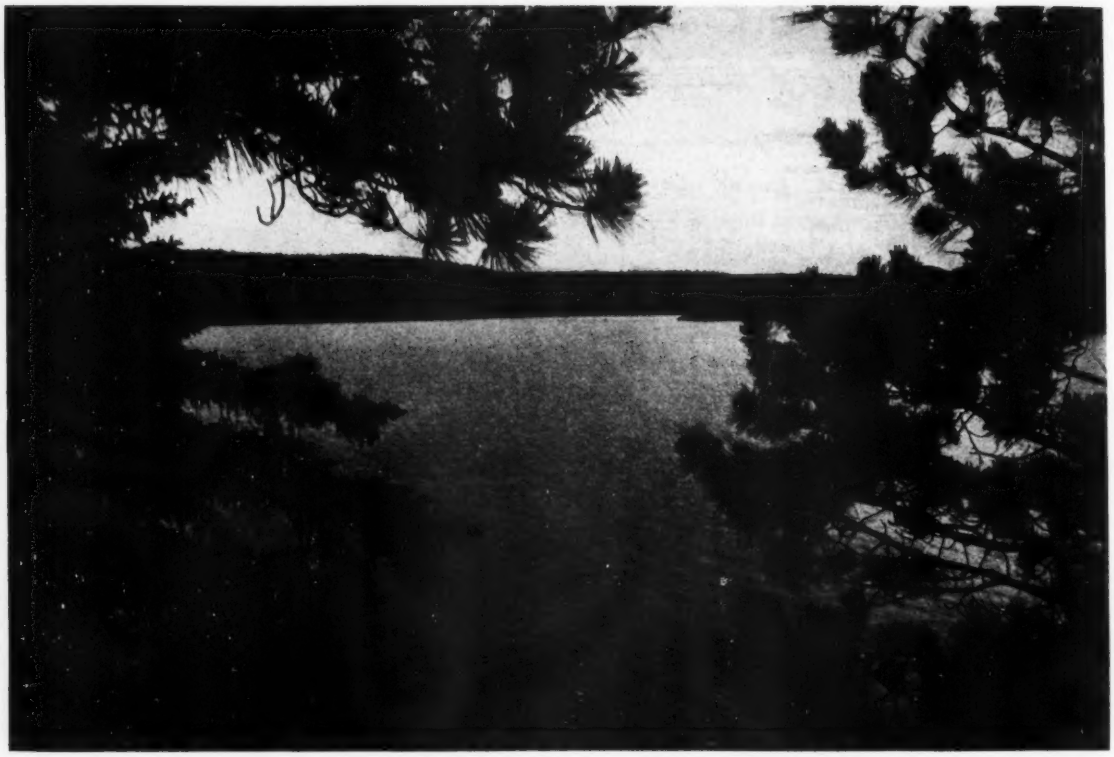
Descending into an anthracite mine — the steep slopes at the mouth have now been planted to trees

Stanley Mesavage proudly shows a visitor his locust plantation, on the refuse bank in Glen Lyon



A water vista in the Quetico-Superior—a forest country of wilderness beauty, connected by more than fifteen thousand lakes

HANDS ACROSS THE BORDER

By ERNEST C. OBERHOLTZER
President, Quetico-Superior Council

MOST of the past thirty-five years of my life—the best ones—have been spent in wild places of the north country from Fort Frances to Fort Churchill and in the barren lands beyond. My home all that time, so far as I have had a home, has been located on a tiny island in Rainy Lake just on the Canadian border. Whatever health I have today I owe to my life in that great borderland of forests, lakes and streams, where the preservation of the best of its wilderness character for the use and enjoyment of the people of two nations whose sons have fought side by side in two World Wars, has become my first interest.

During the fifteen years prior to the outbreak of the present war, the region symbolized the outstanding adventure into wilderness conservation by the people of the United States. Known as the Quetico-Superior Project, it had enlisted the time, effort and determination of men and women all over the country. Accomplishment of its purpose had taken form and was moving forward slowly but surely. Under the demands and strains of another and greater World War, it is only natural that the undertaking should have become dimmed in the minds of many people and unknown to great numbers of the younger generation. Now that the war is moving swiftly towards victory and that victory will make doubly urgent and appropriate the accomplishment of the project, it seems timely to renew it with a fresh vision.

It has been my good fortune to travel thousands of miles by canoe and snowshoe and to know intimately the people and the resources of the region which embraces northern Minnesota and southern Ontario lying west of Lake Superior, extending from near Fort William to Fort Frances. The waters slope from that table-land to the Atlantic, the Gulf of Mexico and Hudson Bay. Through it runs the international boundary, made up entirely of lakes and streams. A special clause in the Webster-Ashburton treaty of 1841 provides that these waters and their connecting portages, as then used, "shall be free and open to the use of the citizens and subjects of both nations." This includes the nine-mile Grand Portage, lying wholly in the United States. It was this route to the west, that — Pierre la Verendrye, born at Three Rivers on the St. Laurence, was the first white man to explore and along which passed all the early exploration of the northwest and the subsequent fur trade.

The Rainy Lake watershed and the much smaller Pigeon River watershed

that links it to Lake Superior, with only a narrow divide between, constitute a great geographic unit, irrespective of political boundaries. The whole region is forested, practically uninhabited, and produces the same flora and fauna, including that largest game animal of North America, the moose. This lakeland contains a superb network of lakes and streams, forming continuous watercourses not only along the boundary but from one country far into the other.

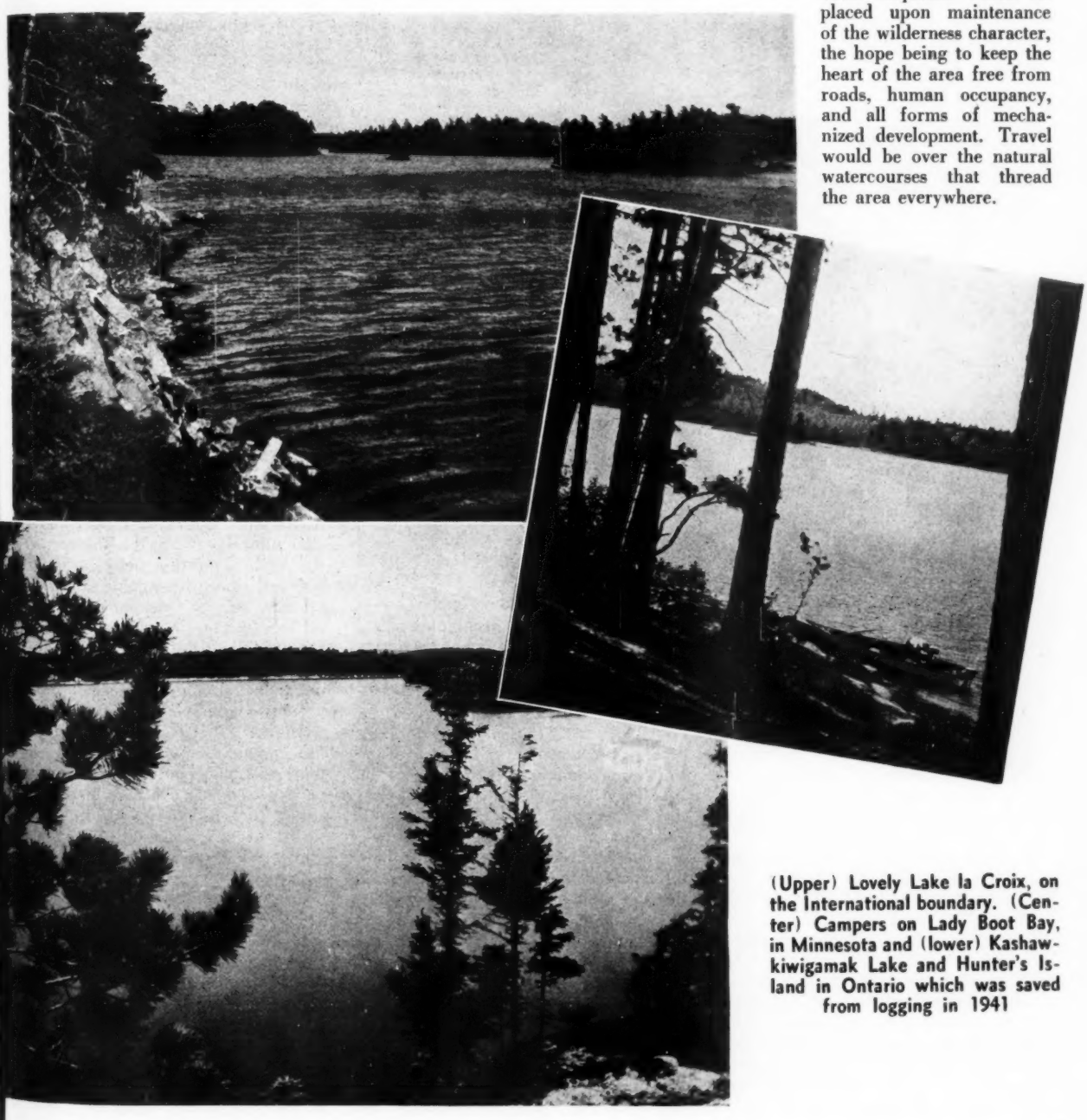
To this border lakeland, the Quetico-Superior Project proposes that Canada and the United States shall agree by treaty to apply, each on its own side, uniform principles of conservation, with three main objectives:

1. That all lakes and streams in the area, together with the wooded shores, islands, beaches, rapids and waterfalls shall be kept in a state of nature, free from damming, logging, or other artificial change.

2. That all timber resources back from the lakes and streams shall be handled on a modern forestry basis for a sustained yield, and

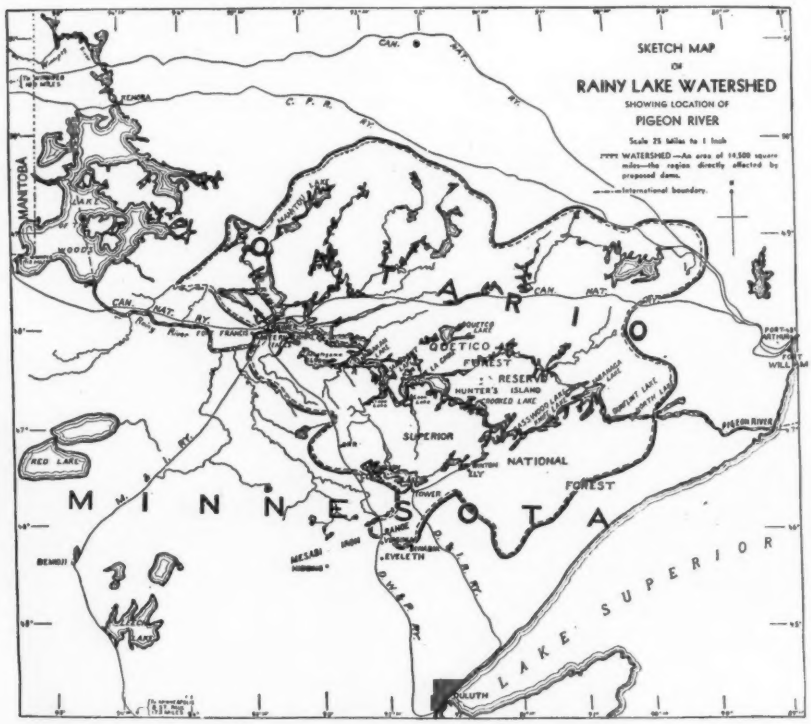
3. That all native game, fish, furbearers and other wildlife shall be managed for maximum natural production.

Thus, in effect, without in any way altering jurisdiction or administration on either side, there would be created a vast international preserve—the largest on the continent. It would not be an international park, since surplus timber, game and fur animals could all be utilized under strict regulation and subject to provisions for refuges and sanctuaries. But, on the other hand, it would be much more than an ordinary forest, since it would keep some 15,000 connected lakes, with all their natural features, inviolate for public enjoyment. Chief emphasis would be placed upon maintenance of the wilderness character, the hope being to keep the heart of the area free from roads, human occupancy, and all forms of mechanized development. Travel would be over the natural watercourses that thread the area everywhere.



(Upper) Lovely Lake la Croix, on the International boundary. (Center) Campers on Lady Boot Bay, in Minnesota and (lower) Kashawkiwigamak Lake and Hunter's Island in Ontario which was saved from logging in 1941

There are already two public preserves in the region—Quetico Provincial Park in Ontario and Superior National Forest in Minnesota. Both were set aside in 1909 largely through the vision of a small group of Canadian citizens, who urged that, if the United States would establish a national forest on the Minnesota border, the Province would take similar action on the other side. Theodore Roosevelt acted promptly on our side, though no official word was ever exchanged between the two governments, and within another month an Order in Council created the Quetico in Ontario. These two preserves, originally of some one million acres each, have been the outposts of conservation in this region all these years. It is proposed now that they be extended on both sides to include the rest of the lakeland. And from them the present movement derives its name —the Quetico-Superior program.



The Rainy Lake and Pigeon River watersheds constitute a great geographic unit, irrespective of political boundaries, says the author. This magnificent lakeland should be preserved in primitive wildness for the use and enjoyment of the people of Canada and the United States and as a common monument to their sons and daughters who have fought together in two World Wars

The two great uses for the region at present are logging and recreation. The one is rapidly declining through exhaustion of the original timber supply. The other is growing by leaps and bounds and has made a name for itself all over the United States. The Quetico-Superior program seeks to reconcile these two primary uses by giving complete protection to the lakes and streams, which are the glory of the region, while at the same time restoring the original forest and permitting regulated cutting of the annual increment. In this way, it is believed, surrounding wood-working industries, now on a liquidating basis, would be assured of a permanent timber supply, and there would be established in the heart of the continent a vast wilderness sanctuary for the delight of the people of both countries.

On the Minnesota side the lands and forests would be owned by the United States government. In Ontario ownership would remain in the Province; but, for the purposes of the treaty, the Province would enter into a contract with the Dominion government for fulfillment of the simple principles laid down under the terms of the agreement. Subject to the understanding as to identical objectives, neither side would give up any jurisdiction or administrative function.

Without some such plan for collaboration between the two countries, this superlative region of lake and forest is doomed. Already in the thirty-five years I have been there, calamitous changes have taken place. Helter-skelter private exploitation, intent only on reaping immediately the wealth of centuries, has brought the natural resources of the region close to exhaustion. And, in so doing, no thought has been wasted on the intangible values — the fish and game, the pure waters, the beauty and wilderness character — which give the area first place in health and recreation for a large part of the continent. Forests have been slashed and burned; game squandered for trophies and pot-hunting; wooded shores, beaches, islands, rapids and waterfalls swamped by dams for logging and power. Fur-bearers have been reduced to a small fraction of their old abundance, some species even extinct; moose are suffering a rapid decline in a habitat of unrivalled fitness; woodland caribou are practically extinct; and only a few hundred thousand acres of the original pine remain.

In 1925 the greatest captain of industry on the Minnesota side not only asked the two governments for permission to dam all the remaining border waters for power purposes, raising some of them as much as eighty feet and leaving the largest stream on the Ontario side dry, but also had no hesitation in suggesting that they also bear the principal costs for this private venture. And it took ten years of solid work and one of the hottest conservation battles ever known in the United States to defeat this modest proposal! Yet this is but one of many dangers, big and little, arising out of the old policy of "come and take it" and constantly threatening the integrity and the economic solvency of the region.

The area is glacial, rock-bound, non-agricultural. With the destruction of the forest everything else is affected—fish and game, dependable flow of water (floods become frequent), and above all the beauty for which the lakes are famous. Lack of public planning for the lakeland as a whole can only mean the rapid liquidation of its unsurpassed economic and spiritual values.

In the United States there is no region left comparable in recreational importance to Quetico-Superior; and there never was one so centrally located. Sixteen million people live within 500 miles of Superior National Forest. North of the Ohio and the Missouri rivers, within easy reach of the area, there are altogether some thirty-five million citizens. They have seen one area after another exploited, cheapened, and finally ruined, until their insistent demand has brought the government at Washington to full attention, even though the states still frequently follow the lead of the exploiters.

In Minnesota unfortunately most of the land in the area passed long ago into private hands, either for timber or

minerals. In order to impose a public plan and to guard adequately against conflicting private plans, it was necessary for the United States government to restore public ownership. That meant expanding Superior National Forest and the small Indian reservation at Grand Portage and repurchasing available private lands. At the present time, as a result, Superior National Forest has grown from one million acres to a gross area of nearly four million acres—the largest in the United States. Of the gross area about one million acres are still in private hands, and more than half a million acres are state lands; but the U. S. Forest Service is still purchasing lands as funds permit, with the idea of consolidating the whole area.

Wherever national forest ownership is acquired, the principles of the Quetico-Superior program are immediately applied. The shores and other natural features of lakes and streams are protected by Act of Congress against both logging and flooding by dams. Nor can there be any logging elsewhere on these lands except under forestry regulation aimed at minimizing the fire risks and assuring continuous forest growth. The Forest Service has also set aside, among the main lakes, areas of more than a million acres, where most of the remaining pine is completely reserved and where no human occupancy, roads or other developments are permitted. And in these wilderness areas the State of Minnesota maintains game refuges.

The total cost to the United States so far has been more than ten million dollars, and another two million will probably still be needed. Why has the government in peacetime spent this staggering sum on one area? The answer is that in the first place the exhausted lands were rapidly becoming bankrupt and a hopeless fire hazard, as well as a burden upon the tax structure. There was no chance of restoration except in government hands. Yet without supplies of timber the remaining industries surrounding the area are of

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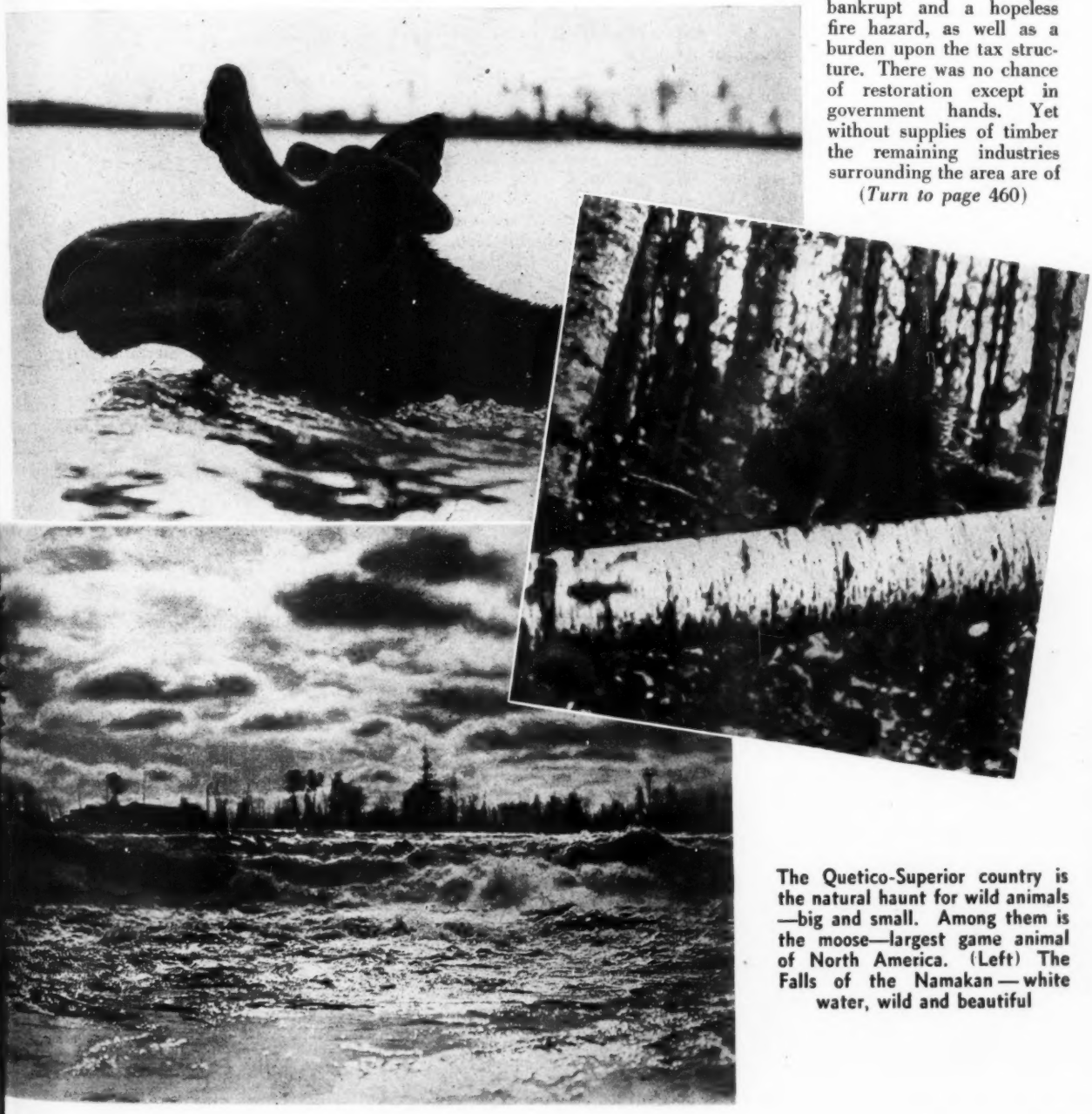

The Quetico-Superior country is the natural haunt for wild animals —big and small. Among them is the moose—largest game animal of North America. (Left) The Falls of the Namakan — white water, wild and beautiful

OVER THE PASS

Trails that Lead Through Granite Gateways of the High Sierra

By CLAUDE M. KREIDER

Straight down from Whitney—in the beautiful and rugged Sierra country

WHEN planning for a pack trip in the California Sierra, the first step is to consult maps and trace out the trails through that portion of the alpine wilderness you have chosen to explore. Then pay long and careful attention to the high passes involved in that itinerary. For up there, above timberline, in a maze of granite peaks that seem to touch the sky, a pass really means something. It is the only gateway from one section of the great range to another, the only means of reaching an alluring region of alpine lake basins and deep, verdant gorges and singing rivers.

That distant notch in the main crest is the pass, through which climbs and winds a narrow trail, just barely passable, in many instances, for your pack animals. Before heading up this trail, you will have packed carefully to insure safe going in the splintered talus. And, as you progress, you will watch your mules to prevent crowding at a bad spot—and trouble. Perhaps you will walk the last part of the hard climb to save your saddle horse. But you will not mind the extra labor, for always there is keen anticipation of just what will be seen over the pass. You will scramble up the last steep pitch in breathless haste, and wonder if your rosy dreams will be shattered by the reality of the Promised Land, a fear, I can assure you, that will be entirely unfounded.

You pause first for one long, sweeping look—and it is all there—a myriad of blue lakes in the wide, green basin spread below, between them shining ribbons of sparkling creeks, and off to one side, in the lea of a granite buttress, a dense clump of lodgepole pine, offering an ideal camping spot. And in those waters should be gamy and delectable golden trout. Your dreams quickly catalogued and fulfilled, you sit a moment, while the animals rest, and gaze beyond your immediate kingdom to the distant skyline, peopled with granite monsters streaked with snow. Between them you discern hazy, blue gorges to intrigue the imagination. Then you start the animals downhill, planning for hot biscuits in the reflector baker—and fried trout—for supper.

The author's wife rests the mule beside a snowbank—then on, up and up, again!

To appreciate the significance of Sierra passes one must realize that the range extends, almost as an unbroken wall, for some 200 miles, separating the San Joaquin Valley from Owens Valley and the desert country to the east. Only one highway, over Tioga Pass in the Yosemite region, completely crosses it at an elevation of 9,941 feet. This is the lowest crossing in the range for a north and south distance of perhaps 150 miles, and is accessible only about four months each summer. The major passes to the south, about a dozen in number, cross the main crest at elevations of from 9,000 to above 13,000 feet, the highest being Whitney Pass, 13,335 feet, while others approach 12,000 feet.

The pass trails generally utilize a narrow notch between the great peaks, but others simply follow the contours up over the top of one of the few

Trail riders working their difficult way up Forester Pass

rounded summits of granite gravel and shale, which, hidden among their stark, precipitous neighbors, surprise the traveler with just another Sierra paradox. They present a natural trail route and save much difficult rock work for the trail builders.

Such is Junction Pass, 13,300 feet above the sea, now no longer in use because of maintenance difficulties. Strangely, also, some of the highest and most rugged passes do not cross the main crest at all, but traverse the massive lateral ridges, such as the Kings-Kern and Monarch divides, which separate and confine all the major watersheds of the range. Thus, Forester Pass, 13,200 feet elevation, provides the only direct trail route between the great Kern River basin and the Mt. Whitney region and the Kings River country to the north. A single big boulder jammed by a slide in the pass and the traveler must plan on several days' hard trail work, by a circuitous route involving many thousands of feet of descent and climbing, to reach his objective.

Whitney Pass, which goes over the crest just south of massive Mt. Whitney, serves the especial purpose of permitting

Looking down from Forester Pass—weariness and even hunger are swept away in that first awe-inspiring look

visitors to ride to the sheer top of this, the highest peak in continental United States. It is probably the highest traveled pass on the continent, so the "climber" who essays this comparatively easy and marvelous journey can feel that he has accomplished two records in high altitude work.

Some of the pass names are, quite naturally, linked with the surroundings, but others, of Indian origin, are musically euphonious and appeal immensely to the imagination when linked with the country beyond. Thus, Silver Pass leads to the Lake of The Lone Indian and lovely Cascade Valley. Mono Pass crosses the main crest to Mono Creek and Vermillion Valley. Olancha Pass, far to the south, opens up the beautiful, pastoral Monacha Meadow country, and Tuolumne Pass provides a gateway in the upper Yosemite region. Early travelers, with their trail difficulties, could be expected to apply appropriate names, which they did. Hell-For-Sure Pass probably deserved—and still does—its

Characteristic of the High Sierra—looking back toward Upper Basin and Mather Pass from near Bench Lake

descriptive title. Tunemah Pass sounds like a typical Indian name, but is said to be a Chinese expression, utterly profane, which a Chinese cook once applied to that tough pass in the Kings River country.

While Sierra trails have been improved through the years, largely through the efforts of the U. S. Forest Service and the National Park Service, the high passes will be a constant problem, for their maintenance is a never-ending battle with the elements. The higher passes are closed by snow through at least nine months of the year, and the trail crews cannot reach them before early July. Ordinary physical effort is slow and labored at these extreme elevations and hard work with pick and shovel is difficult. The crews must camp far below, to find wood and shelter, and make a long, strenuous climb before starting the short day's toil. Thus the pass trail can never be "good" in the sense a bridle path in the lowlands is described. All that can be expected is a possible way across the last thousand feet of elevation over shattered granite, shifting gravel, loose boulders and crevices.

Some of the major passes are never free of snow, even in August, and can be safely negotiated only in early morning while still frozen hard enough to bear the weight of the animals. In others, where snowbanks are steeply inclined, it is necessary to wait for the sun to soften the surface to provide foothold and save the mules from sliding off to oblivion. During such travel you can learn much of animal sagacity by watching seasoned pack mules at their job. Each is turned loose to shift for himself, and he unerringly chooses the best and safest route, step by step, instinctively going around a snow-filled crevice and stepping carefully over a flat but unstable boulder.

While the country "over the pass" beckons ceaselessly—and on the main trails it is not too difficult to answer that call—a true pioneering spirit sometimes asks "what kind of country is over that big ridge?" This, with good luck and much fortitude, may lead to a new pass—a "private pass" marked with appropriate name.

The adventure starts with someone making that thousand foot climb to the ridge to spy out a way. As he finds it feasible for animals he builds a few small rock cairns, rolls aside an occasional boulder and perhaps chinks a bad crevice or two. He works on slowly toward the top, always with an eye for a reasonable grade, and so clambers over a final ledge to survey the entrancing basin beyond. "Yep, certainly looks good," he'll exclaim to himself with enthusiasm, "plenty timber and fine camp sites, nice grass for the stock, and I'll bet that lower lake has some whopping goldens. Virgin fishing, too. Why, we may be the first outfit ever to enter this region!"

So he descends to his camp in long, sliding bounds accompanied by much loose gravel, helps pack the mules and then leads the way up his new "trail". All goes well up that tortuous ascent, except that someone at times has to help boost a mule's pack box around a projecting boulder or chink in a few more bad crevices. After an hour or so and near the top, the trailmaker will offer to bet he's the "first one to get a big golden." Hurrying to join him for a look, someone observes that the mules are waiting patiently for the next move. That final ledge, only three feet high, which the trailmaker had leaped so blithely, extends the full length of the ridge, without a break, and animals cannot leap upward on a forty degree grade. Then suddenly hot and weary and hungry the explorers must turn disappointingly back to the bottom.

But usually success attends the new "pass", and the feat is followed with celebration and felicitations. It would be of interest to know how many of the present trail passes were similarly pioneered by early stockmen, miners and mountaineers. It is certain that sheepmen found many of the first "ways

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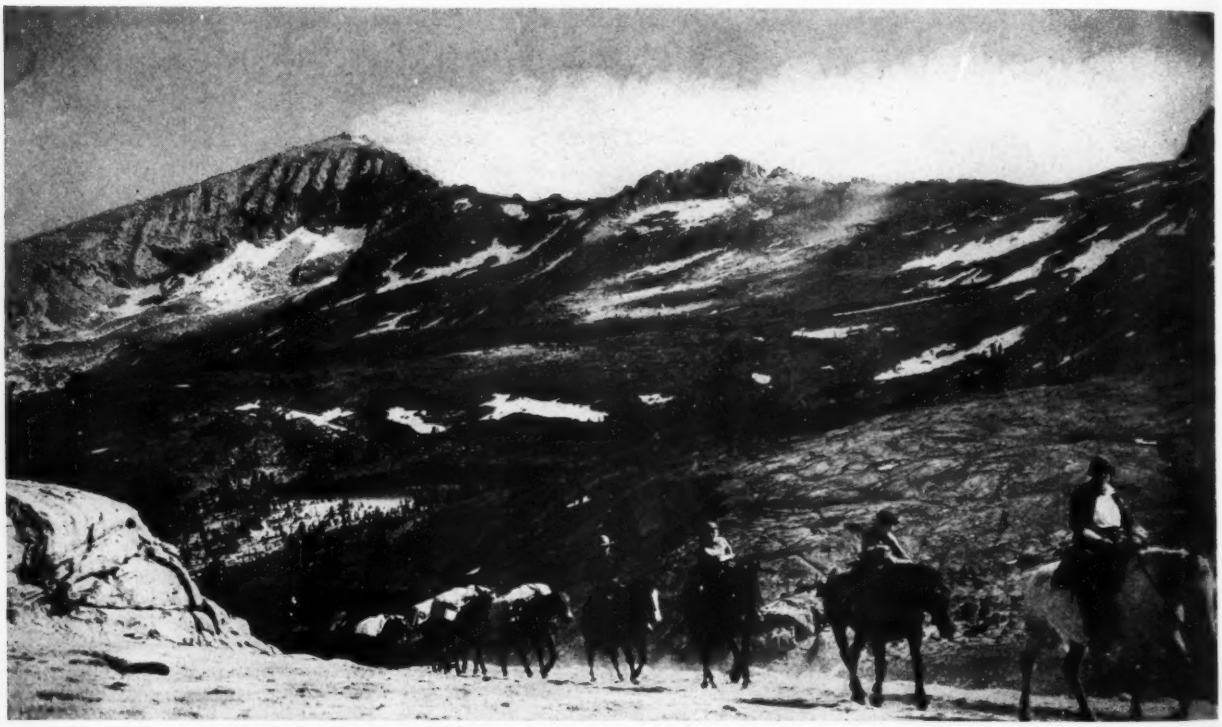


Gravel trails enable the entire family to come "topping out" above timberline

A FORESTER VISITS PARICUTIN

By AUSTIN F. HAWES

DESCRIPTIONS of the new volcano, Paricutin, in other magazines have been so comprehensive that little information about the volcano itself can be added. Strangely enough none of these accounts give any adequate idea of the journey one must take to visit it, or of the singular and romantic charm of the country in which it is located.

As the volcano was one of my main objectives in going to Mexico, I early made inquiries as to the best route to follow. Mexico City is, of course, the natural starting point. This city in itself is unmatched for interest in North America, for it is a city of striking contrasts. The magnificent Paseo de la Reforma leads from a luxurious residential district down to the narrow streets of the old colonial city and on to the Zocolo, which was once the center of Aztec civilization. In many parts of Mexico I was impressed by splendid specimens of ash —*Fresno*, it is called in Spanish—but nowhere more than in the beautiful Alameda park which was laid out some thirty years before the Pilgrims landed at Cape Cod. The site was originally the Aztec market place.

A visit to "El Arbol de la Noche Triste" (The Tree of the Dismal Night) is doubly worth while. Under this great *Ahuehuete* (cypress) in the suburb of Popotla, Cortes is supposed to have wept after the night battle which cost him so many of his small band. Because of the iron fence surrounding it, accurate measurement is impossible, but its great irregular trunk appears to have a circumference of about thirty feet. Long ago the two main stems were broken off, and its crown hardly more than fifty feet high is made up of six or eight large branches. There are several larger specimens of this cypress (*Taxodium mucronatum*) in the Gardens of Chapultepec, the most famous of which is the great Montezuma cypress. It is said to have a height of over 150 feet and a circumference of forty-nine feet, and was a noted tree at the time of the Conquest.

History records that extensive forests were destroyed for the rebuilding of Mexico by the Spaniards after their destruction of the Aztec city of Tenochtitlan. These cypress are undoubtedly remnants of that forest. An American visiting the Montezuma tree which is just below Chapultepec castle cannot fail to notice the monument, close at hand, which is inscribed "to the memory of the alumni of the military college who died as heroes in the North American invasion, 13 Sept. 1847."

Through the courtesy of Professor Barojas, who is in charge of the technical office of the Mexican forestry department, I was privileged to attend the annual Arbor Day exercises which are held in this beautiful Chapultepec park. The gathering of thousands of school children carrying numerous Mexican flags and accompanied by the best music of the nation was a memorable and colorful event. That the children entered into the music and dances more than they appreciated the statistical speeches addressed to the foreign diplomats and politicians is only natural.

It is one of the anomalies of Mexico that it is cheaper to travel than to re-

The terrifying aspect of the new volcano. One can hear its roar, says the author, from the village of Paricutin, seventeen miles away

Using bright Indian laquer trays, these girls did a colorful folk dance as part of the Mexican Arbor Day celebration held on March 15th in beautiful Chapultepec Park

main in the capital unless one insists on going in a tourist party. I had met people who had made the round trip to the volcano for a little over $30 and others who spent $100 for a personally conducted tour by car. The latter is the best way to meet other Americans, but going on one's own is much the best way to see Indians and learn how they live. The trip may be made either by bus or by train. In either case the cost is about a cent a mile. I went out by bus and returned by train; and the round trip of six days cost $42. This included all expenses, including stops at the best hotels in Morelia, Patzcuaro and Uruapan.

There are two classes of buses throughout most of Mexico: second class, which is patronized chiefly by Indians, together with farm produce, including poultry and other small livestock. These are usually filled to capacity including standing room, and often have men hanging on behind. First class buses are patronized by more prosperous Mexicans, and the number of passengers is limited to the number of seats. The trip from Mexico to Morelia, a distance of 195 miles, is made in seven hours, including three short stops. As the road crosses several high mountain ranges by innumerable hairpin turns, and the drivers take these turns at maximum speed, there are plenty of thrills. However, it must be admitted that Mexicans are excellent drivers and accidents are surprisingly rare.

After leaving the capital and Chapultepec park, the road passes through the edge of the National Park, "*Desierto de Los Leones.*" This splendid forest of fir (*Abies religiosa*) and pine (*Pinus montezuma*) contains 1,900 hectares and is still in the Federal District. Elevations run up to eleven thousand feet and spring-fed brooks have summer temperatures of forty-three degrees, supporting brook trout. This forest, once the property of a Carmelite monastery, has belonged to the Government since the closing of the monasteries in 1856. It is a forest of which any country might well be proud; the best I have seen in Mexico; with trees from two to four feet in diameter and heights up to about 140 feet. The old monastery built in 1606 with mysterious underground passages is now a picturesque ruin in the midst of the forest, the objective of Sunday afternoon drives, but quite deserted on week days.

Near this ruin is a small but interesting forest nursery of a pulp and paper company, where trees are raised in pots and cans to be planted out on the lands of the company. Pines are planted twelve feet apart and underplanted a few years later with fir. I was told that this company plants about 35,000 trees a year and that the management is enthusiastic about the program. A little further on is a fish hatchery where rainbow and brook trout are raised.

The air over the valley of Mexico is usually full of dust during the dry season from September to May. This is the result of frequent dust storms over the old lake beds, which are now nearly dry. In coming down into the valley of Toluca, forty miles west of Mexico, which has an elevation of 8,850 feet, the clarity of the atmosphere impressed me. This clear invigorating air also characterized the state of Michoacan farther west. The broad valley in which Toluca is situated contains several small reservoirs and much irrigated land. As everywhere in Mexico, the slopes in places are badly eroded. About twenty-five miles further on we came again into an extensive pine forest with trees from fifteen to twenty-five inches in diameter and many patches of good reproduction, although much of the forest floor is park-like from repeated fires and overgrazing. Many cattle and sheep are seen, but not as many goats and hogs as in some other sections.

The road crosses the boundary between the states of Mexico and Michoacan in a pine and fir forest at an elevation of 9,776 feet. From the pass we could see range after range of high, blue mountains. Then we descended into a vast fertile country with extensive fields of new wheat beautifully green in the late afternoon light of February. It was a thrilling experience to realize that these same fields may have been under cultivation for a thousand years, for it is a generally accepted fact that the Aztecs entered the plateau of Mexico from this region to the west. The lower slopes, as in Arizona, are covered with juniper, but the higher slopes are well clothed with pine and fir. I saw little evidence of over-cutting, and learned that Michoacan had been protected from exploitation by an edict of President Cardenas, who is especially fond of this region.

Forest fires are seen everywhere in Mexico throughout the dry season and apparently little effort is made to control them although this would not be difficult, as they spread slowly because of the scarcity of ground cover. Before reaching Morelia that evening, we passed through an extensive fire which was a weird spectacle in the moonlight and extended as far up the mountainside as I could see.

Morelia, the capital of Michoacan, is one of the most beautiful cities of Mexico and well worth a visit on its own account. Its cathedral is set between two beautiful plazas; and numerous other colonial buildings and the old aqueduct all add charm. Throughout Mexico one

is impressed by the numerous graceful arches which characterize every city and village. The arch was the chief contribution of the Spaniard to American architecture.

There is no first class bus from Morelia to Uruapan so one must choose between a bus full of Indians and a slow train. Tzintzuntzan, on the bus route, is now only a small and bedraggled Indian village, but at the time of the Conquest it was a proud city of forty thousand, and the capital of the Tarascan Empire, which was never conquered by the Aztecs. An amazing feature of this nearly abandoned town is the plaza which was laid out by the Spaniards to accommodate the original population. In 1535, olives brought from Spain were planted all around this plaza and these immense trees compete for interest with a supposed painting by Titian in the old church, and archaeological ruins of Tarascans recently excavated. Patzcuaro is much better known by American tourists, most of whom visit the island of Janizio thickly inhabited by Tarascan Indians, who live by fishing from dug-out canoes with picturesque butterfly nets.

Uruapan, the starting point for the volcano, a city of 20,000, was chiefly known a year ago for its famous lacquer ware, and to a lesser extent for its coffee. But here is located one of the gems of the Mexican national parks, "*La Barranca de Cupatitzio.*" In this beautiful park luxurious with bananas, avocados, coffee, and many other tropical trees, the Cupatitzio river rises—a full grown stream from hundreds of gushing springs. Its waters are crystal clear. Senor Jose Martinez, the local forester, showed me this beautiful park with evident pride. He had studied fisheries in Japan and, as the courses were given in English, he speaks English well.

At night, when all is quiet in Uruapan, one can hear the roar of the new volcano, Paricutin, seventeen miles away. Most of the people of Mexico live in the volcanic belt, and down through the centuries many a cornfield must have been irretrievably lost under volcanic ash and lava. But the old Tarascan Indian and his little boy who saw Paricutin start in their own plowed field on February 20, 1943, are perhaps the only people in the whole world today who have seen such a sight.

To visit this new American wonder we drove several miles on a good road toward Guadalajara and then turned off to the south and bumped along over a new dirt road built for tourists since the birth of the volcano. The road passed through a pine forest and we had not gone far when I noticed that the trees were all badly broken as though they had been struck by one of our ice storms. The weight of the ashes and water had broken them. A little further on, the ground was covered with ashes to a depth of two feet and the surface was marked with small wind ripples. It was raining by that time and everything was black, but when the sun shines the ashes take on browns and other colors. After driving on a mile or so there was a great smoking mass at our left resembling a slag pile. We got out and walked toward it. By now the noise of the volcano was tremendous, like the distant roar of Niag-

(*Turn to page* 463)

The ghost forest in the shadow of the volcano. All about is desolation — the hills covered with heavy black ashes and the skeletons of trees. At the base of the main cone is the first new crater, formed since October, and named Sopicho, the Tarascan word for boy

THE MORMON CRICKET WAR

By JOHN CLARK HUNT

The Jap-like saboteur himself, in profile, ten times enlarged. Like the Jap, war has been made upon him

ABOUT the same time the Allies were driving Rommel's army to its final bitter days on Cape Bon, another and different kind of war was being waged on the Pacific Coast. By comparison, it was a tiny conflict, but it was grimly important to the people of the thinly settled range and forest area of some 25,000 acres in northeastern California near the Nevada line.

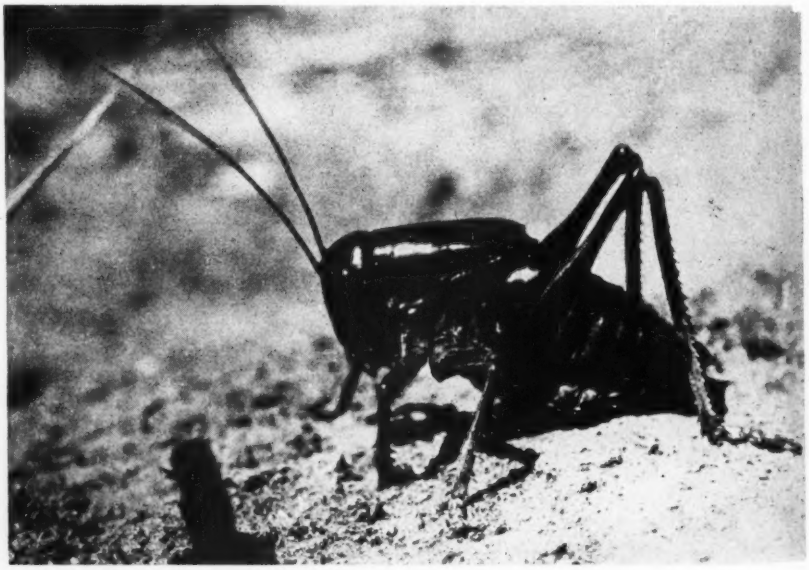
The enemy was an insect less than two inches long — the ugly black or brown Mormon cricket, which looks not unlike a bald, bespeckled Jap! The cricket army came quickly and without warning. One day there were no crickets, the next day there were millions bearing down on the ranches and farms of Honey Lake Valley.

The first offensive against the invading army was made by volunteer rancher crews. Then the United States Bureau of Entomology and the United States Forest Service moved in reinforcements. Ezra Funk, cricket control expert of the Bureau of Entomology, took over as supervising general. The Bureau brought in specialists and set up camp. The Forest Service was represented by district ranger Ben Beard, assistant ranger Frank Tucker, and a fire suppression crew of six men. A two-seater plane with the front seat removed and a hopper installed as the bomb-bay was flown to an emergency landing field in the cricket area, where a specially designed mixing plant was set up.

Then tons of mill-run bran, sawdust and poison (*sodium fluosilicate*) were hauled to the mixing plant. This chemical has been found to be the cheapest and most effective of cricket killers. Although poisonous, there is no danger to livestock, wild animals, or birds if the poison is mixed and spread properly. After careful weighing and measuring, the bran, sawdust, poison and water were mixed and loaded in the hopper of the plane.

Scouts located the cricket fronts and the direction of their advance. Much of this scouting was done by mounted investigators. White flags marked the area to be poisoned for the pilot's convenience. The pilot, who was also the bombardier, then made his runs and sowed the poison between the flags. The cricket war was thus fought day after day, the scouts finding the enemy and flagging the target, the Forest Service fire suppression crew (on portable radio call to the fire dispatcher's office) mixing poison and the pilot sowing it from his plane. There was also a supply service trucking the bran, sawdust, poison, and water to the mixing plant. This back of the line service was no easy job, for on some days the plane would sow as much as twenty tons of poisoned bait.

Like modern campaigns, this cricket war was not fought by air force and ground crew alone. There was also the infantry, or a sort of commando force. Part of the enemy area was broken, rough terrain, too dangerous for the plane to fly close to the ground. So a crew of fifteen men, with mules to pack



The Mormon cricket (male)—really a long-horned grasshopper—which, migrating in great swarms, has attacked both range and cultivated crops periodically in the Western states

the poisoned bait, worked the pockets of the canyons, the steep slopes and rough, broken ridges. Here the commandos contacted the enemy directly, sowing the bait by hand—much like they would sow wheat in a farm field—across the steep slopes, and the path of the advancing crickets. The crickets eat as they move forward and fortunately they have a fatal fondness for bran. So, each poisoned strip meant high insect casualties as they pressed towards the ranches and farms.

The control expense is much greater when the poison is sown by hand, costing from $1.60 to $2.00 an acre compared to airplane sowing of thirty-six cents an acre. It was estimated on the Honey Lake Valley project that the plane could sow as much in five days as two hundred men could in a month.

This cricket war was not one continuous victory for the cricket fighters. There were periods when it looked as if the battle had been won and the crickets were all wiped out, only to have the scouts find new outbreaks on new fronts or that the old bands were still holding out. Then the attack would have to be divided between the old and new bands. But finally, victory was won.

During the first days of the Honey Lake outbreak, there was something of a mystery in the sudden insect attack. Where had they migrated from? How could they have appeared overnight in such tremendous numbers? There was, however, an old story about great cricket armies that had invaded the same area at the turn of the century. These migrations of forty years before had come from the direction of Stony Ridge, devouring almost every plant and blade of grass as they advanced—or so the story ran. But no crickets had been seen since in this area. Where had they come from now—and why—after all these years?

The Bureau of Entomology solved the mystery. The local people agreed the original infesting bands came from the direction of Stony Ridge which is a high, open, rocky ridge with low, sparse cover. It is an ideal Mormon cricket breeding and hatching ground. The number of crickets, even in a permanent breeding grounds, depends upon weather conditions. During adverse years a limited number will continue to exist until one or more favorable years occur. Then they reproduce to their maximum capacity (each female Mormon cricket may lay as many as two hundred eggs in a season) and when the number becomes too great to feed at or near the hatching grounds they start migrating.

This, then, was the mystery in the Honey Lake-Last Chance Creek area. Enough of the insects had lived year after year on Stony Ridge until conditions were right to increase their number to an army of millions. And finally, after forty years the weather was right.

In the camp of the cricket fighters. Here strategy was shaped and forays went forth in the battle to control the invading hordes of devastating Mormon crickets

They are interesting little villains, these Mormon crickets. Not crickets at all but grasshoppers, they belong to the long-horned group as distinct from the short-horns. There are several hundred species of grasshoppers in the two groups, but fortunately only a small number of species are destructive. The Mormon cricket is one of the outlaws of the family. Strictly a western outlaw, he operates principally in eleven states —Colorado, Nebraska, South Dakota, North Dakota, Idaho, Montana, Wyo-

(*Turn to page* 454)

Here, its bomb-bay loaded with poisoned bait, the control plane comes in for a run over the target. The airplane has been an effective weapon in the fight.

THE FORESTS OF RHODE ISLAND

By P.L. BUTTRICK

Preview of Their Postwar Condition

THE recent past has dealt harshly with Rhode Island's forests; over-cutting, lack of protection from fire, the 1938 hurricane, have combined to wipe out nearly all merchantable timber. This fact is perhaps the most striking among the findings of a forest resource appraisal carried on by The American Forestry Association in cooperation with the Rhode Island State Forest Service. Here is a challenging situation, since nearly two thirds of the state's area is forest land. For although they have been rendered currently unproductive, by continued abuse, these forest acres are capable, if well managed, of contributing materially to the state's economic and social well-being.

Even in such a highly industrialized and thickly populated section, the time-honored uses of the soil still have their meanings. Agriculture continues to provide a living for 3,000 farm families, upon 131,000 acres of open land. Yet there is a definite tide of farm abandonment, reducing tillage areas by a few hundred acres each year and adding to the potential forest. Such facts are of real interest to Rhode Islanders, who, like the residents of other states, desire to know what are the post-war prospects for farm and forest production in their communities.

The Forest Resource Appraisal is designed to give the American public a state-by-state report upon our forests, after four years of war's attrition. Rhode Island was selected as the first unit to be covered in the Northeast. Several considerations influenced this choice; the area is small, forests are accessible, local forestry authorities were ready and willing to give important help, and a complete set of excellent, large scale aerial photographs was available for use.

This article highlights findings of the Association's Forest Resource Appraisal in the first state in which field work has been completed. The author, Mr. Buttrick, is regional consultant for the appraisal project in the nine northeastern states.

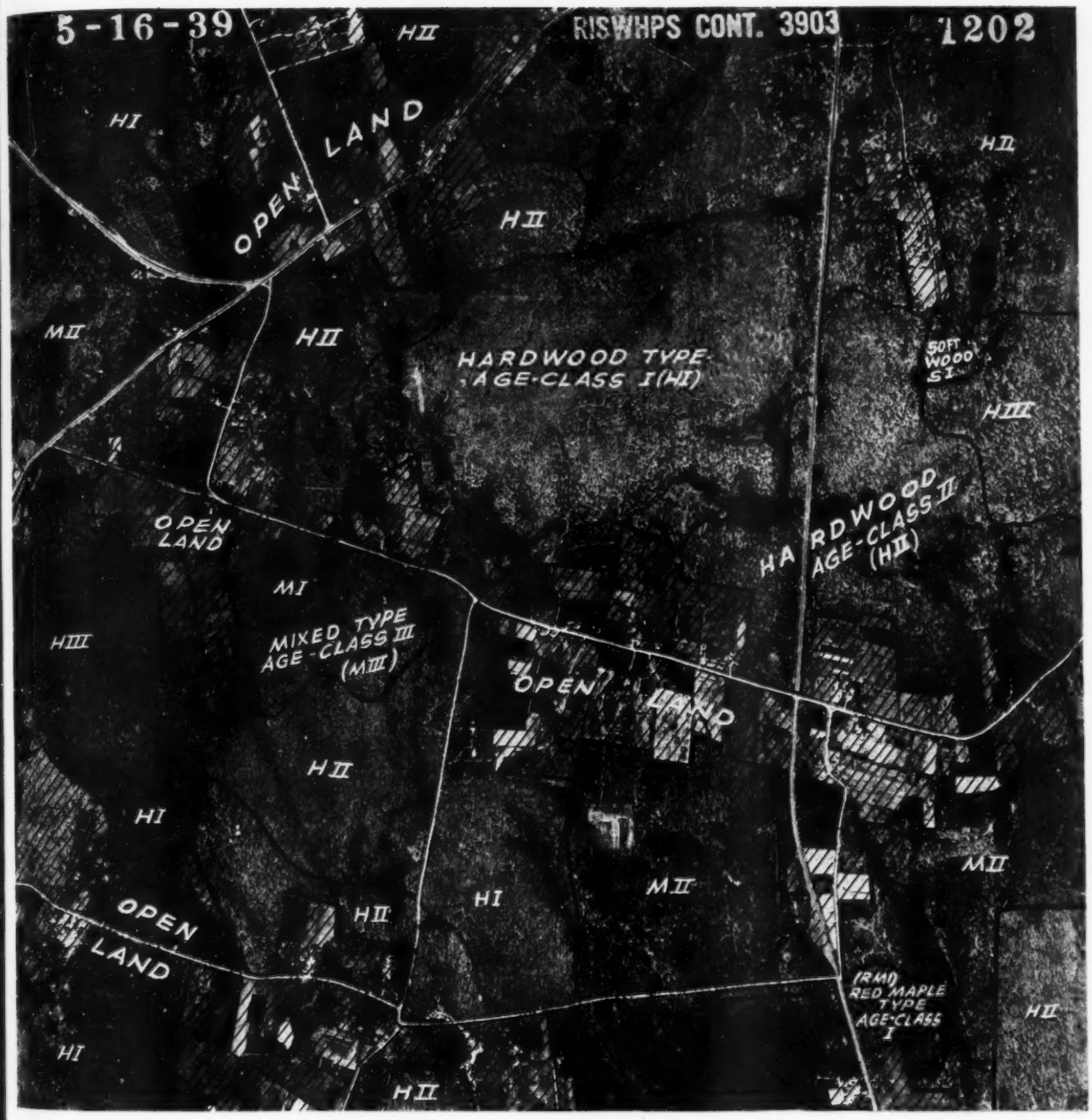
Work was begun on June 6, 1944, under the writer's direction, in collaboration with State Forester Eric G. Jacobson. Essential field and office assistance has been rendered by several members of the State Forest Service: Rangers Willard Hall, E. S. Hoxie; Cartographer George Matteson; Patrolmen F. C. Cole, A. G. Hart; Tower Observer Helen Sweet and others. Special thanks are due L. Russell Albright, Farm Forester of the Rhode Island Soil Conservation District, for his aid in securing background data.

The appraisal follows two distinct lines of inquiry. One is a physical inventory of the forests to ascertain: (1) their area, by (a) forest types, which is to say, kinds of stands according to species dominant in different areas, and (b) size or age-classes; (2) their total volume by these same divisions, expressed in cords, cubic feet and thousand board feet; (3) their probable volume of usable wood ten years hence, assuming protection from fire and freedom from unwise cutting. The second line of attack consists of a study of present uses, conditions of management, owner attitudes, taxation, fire protection, and other significant matters.

Actually, trees are growing upon more than 400,000 acres of Rhode Island, or about sixty percent of its land area. A few thousand unused acres which might be supporting trees are in slow transition from farm to woods. It might be well to point out here that artificial reforestation, by planting seeds or nursery stock, is rarely necessary. Upon approximately nine-tenths of the land definitely classed as forest, stocking appears to be satisfactorily dense. Unfortunately, at present such stands are composed chiefly of trees which are both young and small.

Most of this young forest is of useful species. Protected from fire, it grows reasonably fast. Yet most of the growth which occurs each year is in such young stands, which cannot begin to reach size for profitable cutting in less than ten years. Actually the area of forests not destined to be merchantable as high grade products in less than thirty years far exceeds that which will be commercially attractive in ten to twenty years. Such a situation is an excellent basis for planning a future forest industry, but it offers little help in alleviating present or immediate post-war forest product shortages.

Currently, total yearly growth probably exceeds the total volumes of wood cut or burned, or otherwise drained from Rhode Island's forests. However, the fact is that very little timber is being



MAPPING FORESTS FROM THE AIR

Rhode Island's forests are being appraised from aerial photographs. Areas of open or non-forest land are outlined and marked with cross hatching. The forest areas are then studied to determine forest types and age-classes, each being labeled with appropriate key numbers and letters. The flying was done in 1939. Since then certain stands have been cut or damaged by fire; those left untouched have increased in volume. By examining sample areas, on the ground, the photo-interpreters inform themselves as to growth changes. Rangers detailed to the office work are familiar with the fire and cutting history in their districts and so are able to make the corrections on the photographs to cover these changes.

Forest types shown on the photograph above are based upon predominant species and groups of species. Age-classes are shown in five divisions, according to average age, diameter breast-high and height of the trees in the stand. Thus the designation MH II means that the area so marked contains mixed hardwoods of second age-class; eleven to twenty years old, and averaging five inches DBH and twenty-five feet in height.

Acreages of these forest types and age-classes are computed by a simple mechanical method. Meanwhile, studies are being made of the present wood volumes in these different kinds of stands and of the rates at which such volumes increase by growth. Total present volumes and probable future growth are thus ascertainable by arithmetic.

The actual photographs used are on a scale of eight inches to the mile or 660 feet to the inch. Individual sheets, sixteen inches square, actually represent land areas of four square miles each, or 2,560 acres. A square inch, therefore, covers ten acres. The photographs are the property of the Rhode Island State Forest Service and were made by Standard Aerial Surveys, Inc., of Newark, New Jersey.

cut here. During 1943, lumber production was less than 3,000,000 board feet, and fuel wood cutting probably did not exceed 16,000 cords, approximately half of this quantity having been burned upon the farms where it grew. Small volumes of wood were made into fence posts or converted into charcoal. With production at such an inconsequential level the probability that yearly growth exceeds drain means little.

More significant for the immediate future is the disclosure that lumber production is doing a nose dive even from 1943 levels. Last year more than a score of mills were operating in the state; today less than half that number are reported active. While labor is less easily secured now than a year ago, scarcity of stumpage suitable even under present prices and specifications is believed to be the real reason for such a shift. It is said that several of these erstwhile Rhode Island operators have moved to New Hampshire. However, before leaving they helped scrape the bottom of the barrel.

Outstanding dangers threatening Rhode Island's forests are fires and premature cutting. In the past many stands were cut as soon as they reached fuelwood size. Generally accepted minimum diameter limit for sawlog trees has been nine inches at breast height. Clearly the most urgent immediate need is the application of sound forestry practices. Trees of inferior species and form, whether large or small, should be removed from the forests for low-grade uses, such as fuel, and the remainder should be left and protected, to grow into large trees, suitable for cutting into sawlogs, piling, veneer bolts and other high value materials. By such methods, land owners can help bring back the wood-using forest industries which once flourished along Rhode Island's streams. In the process they will broaden their own opportunities for successful forest management.

As recently as 1939, forest fire protection was a haphazard local (largely town) undertaking in which the state's interest was measured by a modest legislative appropriation of $13,292. At that time, the federal government contributed $2,660 under the cooperative provisions of the Clarke-McNary Act. In 1943, the state expenditure stood at $41,067, while federal aid amounted to $23,380, and the towns spent locally approximately $3,000. This definitely spells progress. The protection organization is statewide and vigilant. However, there still remains dual responsibility of state and towns to control fires, an arrangement which has been found unsatisfactory in certain other Northeastern states. By way of summary, it may be stated that forest protection in this state is a recent development now well established and becoming increasingly effective.

In the land ownership pattern of Rhode Island public forests are not territorially important, amounting to only about eight percent of the total. These are mostly in the form of state forests which are treated primarily as recreation areas. Industrial ownership, by which is usually meant ownership by forest industries or owners making a definite business of selling timber to such industries, scarcely exists here. Farm ownership accounts for somewhat more than 100,000 acres. Ownership in the private estate category, large and small, is estimated at some 50,000 acres. There are perhaps a very few thousand acres owned by sawmill men. The remainder, 200,000 acres more or less, roughly fifty percent, is owned mostly in small blocks by people who hope eventually to profit from them in one way or another. The only proper title for this class of ownership would seem to be *speculative*.

Typical cutover area immediately after logging. Wide use of clear cutting has resulted in large areas of young growth and a dearth of merchantable stumpage

Their ideas of profit are varied. Some, chiefly farmers, who have acquired detached pieces here and there, expect their profit from later sale of stumpage. (This is perhaps a form of industrial ownership although it does not conform to the conventional industrial pattern.) Other lands well situated for private recreational use are being held for sale in medium or small blocks for this purpose. Other areas are held by families who have moved to cities but, since taxes are low, have little incentive to sell. They hope a market will develop but have little idea as to whether it will be based on recreation, timber or some other value. One characteristic shared by most such owners is that they do not contemplate making any expenditure on their lands for forest improvement. Nor do they ordinarily place restrictions upon cutting practices if and when they sell timber. Here is a fertile field for extension, particularly because these owners appear to be investment-minded. This acreage must justly be classed as *unstable* in that until it is sold to owners who will put it to a definite use or until the present owners decide on constructive use, its future is uncertain.

Forest taxation is a town matter, conducted without much reference to timber values. From the point of view of the forest tax expert it is utterly illogical, but rates and valuations are moderate. So long as rates and valuations are not materially increased, the field for forest investment is favorable.

Although final inventory summaries are as yet incomplete, it appears safe and desirable to present in detail certain facts about the forest. These data apply to an area of 218,000 acres, slightly more than fifty percent of the state's woodland, and believed to be a fair sample of the whole. Distribution of age-classes is as follows:

Class	*Age*	*Acres*	*Percent*
I	Under 10 years	64,300	30
II	From 11 to 20 years	71,600	33
III	From 21 to 40 years	63,800	29
IV	From 41 to 60 years	17,600	8
V	Above 61 years	700	—

Summarizing, thirty percent (by area) of the forest so described is too young even to yield firewood; thirty-three percent will yield a little fuelwood from its larger trees; twenty percent is capable of yielding a fair volume of fuelwood and a small amount of low grade sawtimber, but less than one acre in each hundred contains a stand of sawtimber. As stated earlier, this picture is not encouraging from the point of view of increasing lumber production now, but it is not necessarily discouraging for the future.

If fire control is kept to reasonably high standards, and if the sub-merchantable age-classes are not subjected to unwise cutting, Rhode Island may look forward to the maturing of a very considerable volume of timber in the not too distant future. Since it is reasonable to assume that one half of the trees in each age-class are below the average age and that half are older than the average, we may prophesy that during a ten-year period a certain number of trees will grow out of each age-class into the next higher. Of course harvesting may upset this movement, particularly in older stands, where removal of veterans

(*Turn to page* 446)

CANADA PLANS for the POSTWAR TOURIST

By JAMES MONTAGNES

A vista of Sunwapta Canyon—many roads such as this one through Jasper National Park are planned in the development of Canada's vast terrain for postwar recreational use

CANADA'S tourist trade is to be developed to one of her leading industries in the postwar years. To this end, plans are already under way to provide more natural scenic and game preserves, to build better highways and other travel arteries to and within these areas, and to provide more and better accommodations.

Canadians are convinced that when the war is over there will be more demand for travel and recreation by North Americans than at any time in the past. With gasoline restrictions lifted, with more aircraft available for civilian travel, and with the railways geared to wartime traffic, a rush is expected to the Dominion's forests and other recreational areas. Even from the far corners of the earth tourists are expected to flock to Canada. One reason for this is that during the war recreation facilities at numerous national parks have been utilized by airmen training in the Dominion. These men from all the United Nations have sent home literature in vast quantities. In the postwar era they, as well as their friends, are expected to return to Canada to enjoy in peacetime the recreational and scenic features of these preserves.

To coordinate plans for this expected postwar tourist trade, the Canadian government recently called together all interests concerned with travel and recreation. At this conference partial plans for the development of national recreational preserves throughout the dominion were announced, as was the government's program for more effective game and fishery control, for better hotel accommodations, for distinctive Canadian meals, for a handicraft industry to supply the souvenir-hunting tourist, and other factors designed to promote a bigger tourist business.

Before the war Canada had twenty-six national parks covering more than 29,700 square miles, stretching from the Rocky Mountains to the Atlantic Coast. In addition, there were game preserves in every province. Recently, as a development of the wartime opening of northern British Columbia and the Yukon by the Alaska Highway, a new park of 10,000 square miles, adjacent to the highway, has been set aside for postwar development. More parks are to be developed in eastern Canada as well as on the Pacific Coast, provincial governments having offered land to the federal government for extension of the system.

National parks in Canada were estab-

(*Turn to page* 462)

MASTER FOREST FARMER

Frank Salisbury, Orchardist and Woodsman, Does Outstanding Production Job in the Empire State

By J. A. Cope

Frank Salisbury standing by one of the great tuliptrees which went to war—answering the call for airplane veneer

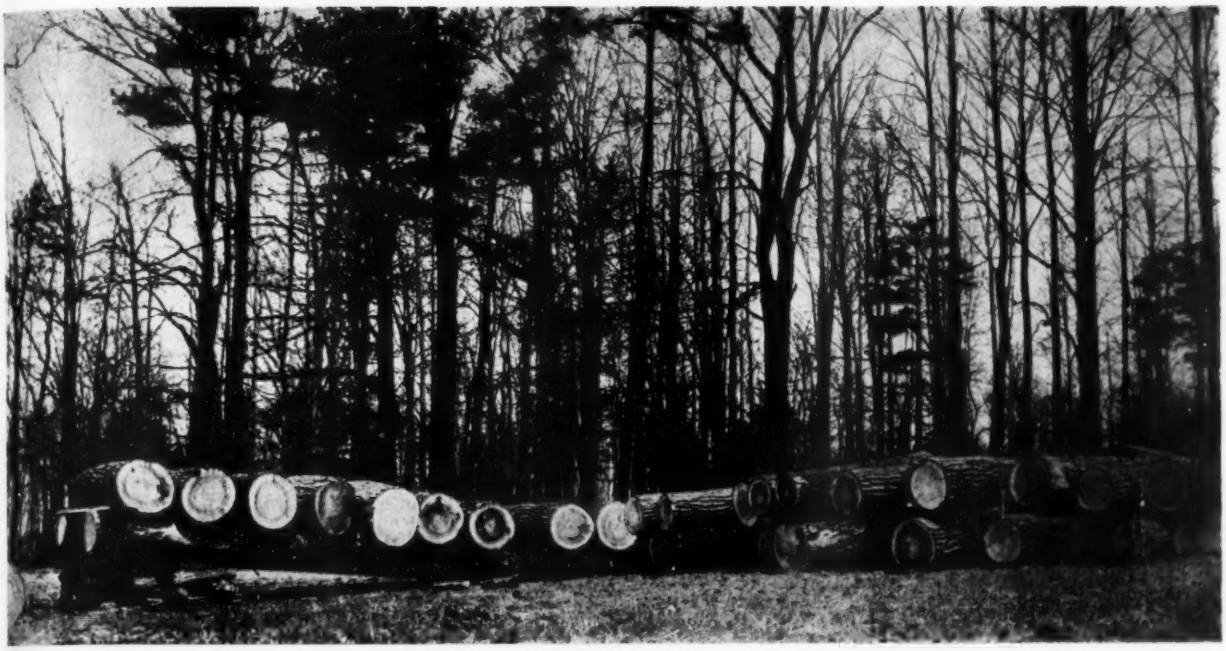
IF RECOGNITION were given in New York State, as it is in Scandinavia, to farmers performing an outstanding job in the care and development of their trees, Frank Salisbury of Phelps, Ontario County, would head the list as far as the Empire State is concerned.

That Mr. Salisbury really loves trees is evidenced by the large number he has on his farm. Half of his 200 acres is devoted to tree growth—fifty acres in orchard and fifty in natural woods, with an additional ten acres in forest plantations. This area balance between woods and orchard in the case of an active, broad-minded farmer like Frank Salisbury, has been a break for forestry. In normal times, three or four men, in addition to father Frank and son Richard, are required to keep abreast of truck crops in summer, the spraying of the orchard in the spring, and the harvesting of fruit in the fall. In winter this same force, once the orchard is pruned, can be turned into the woods with results that through the years have surprised even Mr. Salisbury himself.

Take the matter of fuelwood, which is probably the most important forest product coming from farm woodlands. Mr. Salisbury brought his bride to the family mansion in 1900, and through all these years wood has been the principal fuel for cooking and heating in the main house as well as the tenant house. The usual stint for the winter is from twenty-five to thirty standard cords. Because the wood is cut a year ahead, so that it has ample time to season, this volume serves home requirements and leaves a few cords to sell to neighbors who do not have woodlots.

When a farmer sends a crew of men into the woods every winter for forty years, with the specific objective of getting fuelwood exclusively out of dead, dying, deceased, defective and suppressed trees, the results are bound to be significant. One can walk at will

In the white oak forest. The trees, spaced eight feet apart each way, were planted by the master forest-farmer in 1926



Just part of the shipment of 149 huge tulip veneer logs which Mr. Salisbury with his own men felled, bucked, skidded, loaded and sent on the way to the airplane factory at Louisville, Kentucky

through these fifty acres of woodland and find not a single dead branch on the ground, not a crooked, defective tree in the thrifty forest of ash and basswood, oak and hickory, hemlock and pine.

When the general fuel situation became serious in the fall of 1942, Mr. Salisbury accepted an invitation to tell folks over the radio at Cornell about his experiences in heating with wood for a period of forty years. Prior to 1925, heating was done by chunk stoves. Since then, a heating plant in the cellar, burning wood exclusively, has kept his substantial twelve-room house comfortable, even in zero weather, on an annual consumption of twelve standard cords of wood. Sufficient coal to supply equivalent heat would have cost around $125 a year. The woodlands would have been unimproved; the men laid off for want of winter work.

It is only fair to point out that Mr. Salisbury had a real woods with which to start management. The 200-acre farm came down in direct line from his great, great grandfather who settled and cleared the land just prior to 1800. Through all the generations since, the fifty-acre tract has remained as woods—never pastured, never burned, just allowed to grow on the rich loam soils so characteristic of the Finger Lakes region. Records of all logs removed from this fifty acres during nearly a century and a half are not available. But since 1900, when Mr. Salisbury took over as owner-manager, 175,000 board feet of sawlogs have been cut—and there still remains a stand that averages better than 8,000 feet an acre.

In 1939, the woods was subdivided into five compartments of approximately ten acres each, so as to concentrate the winter work more effectively on an area basis. The sequent cutting had just gotten under way when the war brought interruptions and an acute labor problem. Work in the woods had to give way to more pressing priorities. But then, in the spring of 1943, came an announcement from the War Production Board that tulip poplar was vitally needed for airplane veneer, and Mr. Salisbury decided that here was an opportunity to make a timely and profitable contribution to the war effort.

A glance at the inventory sheets on all subdivisions showed thirty-five tuliptrees over twenty inches in diameter suitable for veneer. Even though spring work on the farm was pressing, here was a job to be done, and with characteristic vigor, Mr. Salisbury went to work. With his own men he felled, bucked, skidded, hauled and loaded those huge tulip logs on freight cars at Phelps; five miles away. There were 149 logs ranging in length from twelve to sixteen inches, and in diameter from sixteen to twenty-nine inches. The total scale was 25,647 board feet, or an average of over 730 feet a tree. Four freight cars were required to carry these logs to the airplane factory in Louisville, Kentucky.

Mr. Salisbury's check from the log buyers was $1,806, which means about $70 a thousand feet, loaded on the car. But even more remarkable is the stumpage price received for these tuliptrees. Because he and his regular farm force did all the operations from stump to freight car loading, the cost was only $14 a thousand feet, leaving him $56 for standing timber. This is the highest price ever paid for trees standing in the woods in New York State. The tops were hardly suitable for fuel, so they were hauled to a local sawmill and converted into crate stock for his apples—a credit of another 7,000 feet to the thirty-five trees. There are still 200 tuliptrees under twenty inches left to carry on.

In addition to managing his fifty acres of forest for fuel and sawlogs, Mr. Salisbury has found time and place to do some planting. The place was easy to find—a six-acre sandy knoll that had failed to produce satisfactory crops of either melons or potatoes. So, in 1909, when trees for forest planting were first offered by the state to the public, Mr. Salisbury was a customer. Over a three-year period some 7,000 white pines were set out. A look at the rows indicates survival of at least ninety-eight percent. Now, as the quarter-century mark is reached, this block of pine is rapidly developing into a forest. Pruning and thinning are under way, and the annual growth is estimated to be about 700 board feet an acre a year.

(*Turn to page* 456)

The Forests of Rhode Island

(*From page* 442)

will reduce the survivors to younger age-classes. On such assumptions it is possible to forecast age-class distribution a decade hence, or even beyond.

We may estimate, for example, that in ten years' time our youngest age-class will have shrunk to half its present area, even including certain acreages added by reason of fire and cutting. At the other end of the scale, forty-one to sixty year old stands will have more than doubled in extent, and the area of merchantable timber will exceed 9,000 acres. Project this forward to 1964 and these two last described classes increase in area to 54,000 acres and 20,000 acres, respectively.

While the expectation of having 20,000 acres of merchantable timber by 1964 is a pleasing prospect, foresters would warn that full productivity cannot be attained before 1974, or thirty years hence. What then? How much usable sawtimber may be standing on these lands at that time?

Here again we are handicapped because our local unit volume and yield tables are not yet quite ready for use. However, by borrowing average volume figures collected some years ago in nearby Connecticut, we may get a tentative estimate of the present timber stand in Rhode Island. Applying such per acre estimates of sawtimber to each age-class in the area described above, we find a total of 139,000,000 feet of merchantable sawtimber upon 218,000 acres today.

Most of this sawtimber is in the form of scattered trees, widely spaced throughout large areas of young growth. Even at present inflated prices, and assuming labor and transport to be available, they could not be profitably harvested. Nor are the sawlogs in Class IV stands financially attractive, even today—otherwise those woods would be full of loggers. Class V stands afford good opportunities but their total area is pathetically small, and the individual lots are tiny. Some of these trees are being cut at the moment and some are on areas reserved from cutting. Briefly, this 139,000,000 feet of sawtimber has theoretical but not practical existence.

What of 1974? If we apply such volume figures to age-classes as they should exist thirty years hence, there comes out of the calculating machine an astounding total of nearly 600,000,000 feet. for the area under discussion, or somewhere about a billion feet of sawtimber for Rhode Island as a whole—a significant volume of merchantable timber in any state.

Such an impressive forest capital will not be built up without a deliberate policy of protecting and improving the present young stands. Adequate fire protection and the use of constructive methods of cutting must be pillars of such policy. Such forestry will yield vast quantities of cordwood—for fuel and pulping, along with sawtimber and other high value products. Here, then, is a second challenge, rivalling in importance the need for good forestry. Rhode Island must have wood-using industries to absorb materials of both high grade and low.

Montana's albino buffalo — a magnificent specimen

Montana's Albino Buffalo

MOST Americans have, no doubt, seen buffalo on the range; at least most of the people in the West have seen them. Others have most likely seen buffalo in animal parks or zoos. So the buffalo, or more correctly, bison, are not so unusual a sight. But I wonder just how many have seen a *white* buffalo? Indeed, I wonder how many have *heard* of one?

Up on the National Bison Range near Moiese, Montana, there is a magnificent specimen of a white, or albino, buffalo bull—white, that is, except for a great shaggy mass of black hair on the crown of its head. This crown, or cap, of matted. black hair gives the animal a truly diabolic and sinister appearance.

It is indeed a sight to see this giant white bull leading the rest of the herd around. There are several other buffalo bulls in this particular bunch that run together, but the leadership of this albino bull is recognized and conceded by the others, themselves admirable specimens of normal American bison. Where the white bull goes, the cows and calves follow. He is a perfect monarch and individualist in other ways, too; he is quiet and stolid, but he is bold and unafraid as well he might be. And, as befitting his rank, he usually occupies a barren rise or knoll where he can overlook the herd.

This albino bull was born in 1933. His parents were normal buffalo, although his mother was an exceptionally fine specimen of a cow.

There is one other white buffalo in continental United States today. Those who have visited the National Zoo in Washington, D. C., have no doubt seen it. This is a true albino, and was born blind. But the interesting part of it is that this buffalo in the National Zoo is the calf of the white buffalo of Montana. This calf's mother is also the mother of the white buffalo bull pictured here. The calf was born in 1937 on the National Bison Range.

It is believed that there is one other white buffalo in existence. A Fish and Wildlife Service agent reported seeing a white calf in the buffalo herd now ranging in Alaska.

In addition to these three, white men knew of two other white buffalo in the early days; and the Indian tribes of western Montana have legends of three or more others.

In the old days a white or albino buffalo was sacred to the Indians. Evidence of this virtual worship of the animal can be seen today in the use of the buffalo skull, or "medicine skull."—*Peyton Moncure.*

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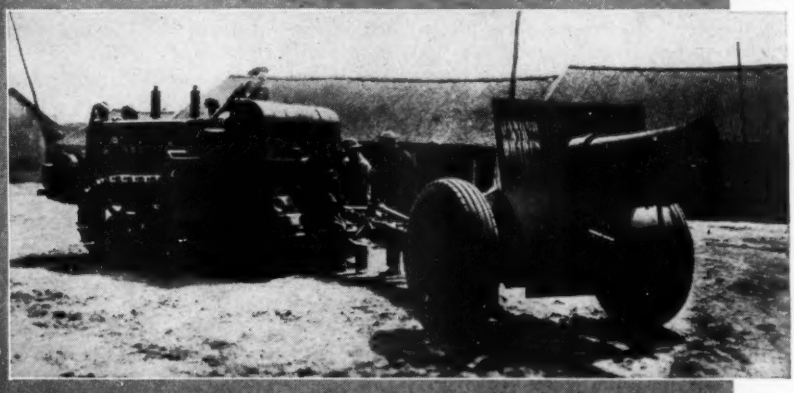

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Tree Trails . . .

Across America in Search of the Rare and Unusual

AN old veteran American beech, *Fagus grandifolia*, is known as the "Cannon Beech." Though in poor health and with but one live limb supporting a luxuriant growth of foliage, it maintains its prestige as champion of its species in The American Forestry Association's campaign to locate and preserve the largest living specimens of American trees. It was nominated by State Forester William S. Taber of Delaware, in 1940.

Growing on the property of Roy Cannon, near Cannon, Sussex County, Delaware, this great old tree measures fifteen feet, ten inches in circumference. Its one limb, though badly decayed like the trunk, measures fifteen inches where it branches off and extends upward to a height of fifty-five feet.

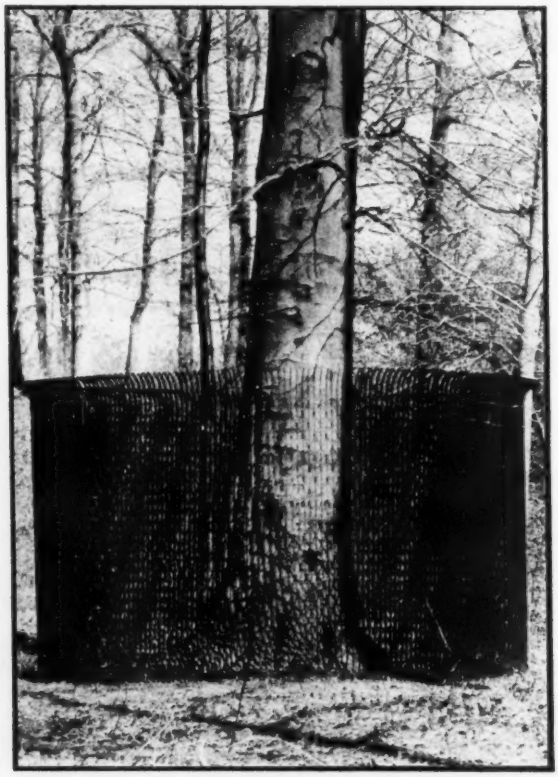
When death claims the aged king, the championship crown will pass to an Ohio *Fagus grandifolia*, unless a larger American beech is discovered and reported to the Association in the interim. The Ohio giant is fifteen feet, six inches in circumference four and a half feet above the ground, and is 100 feet tall. It is growing on the property of Mr. A. L. Hadlock, near Ashtabula, and was nominated in the Big Tree Campaign by Mr. William F. Davis of that city.

Champion of this species for the State of Maryland is found near Easton, and estimated to be 385 years old—two centuries older than the freedom of America! This American beech has a girth of fifteen feet one inch, a limb spread of 101 feet, and a height of ninety-four feet. It was recently nominated in the Hall of Fame for Big Trees by H. Gleason Mattoon, secretary of the Pennsylvania Forestry Association.

At an impressive Arbor Day celebration in Glenbrook, Connecticut, on May 12 just passed, a majestic 200-year-old American beech was dedicated "as a living symbol of American strength and vitality—a heritage for future generations." Known to New Englanders as the "Holmes Beech," the tree is growing on the property of Mr. Walter E. Irving in the Darien section of Glenbrook. Ninety-eight feet in height, one of its notable characteristics is its towering, columnar trunk which measures ten feet, six inches in circumference.

Dr. Stanley Bromley, of the Bartlett Tree Research Laboratories at Stamford, Connecticut, in addressing the large assemblage, elaborated on the historical events which transpired from the time the beech was starting life as a sapling, and said that the beginnings of this great tree far antedate the in-

(*Turn to page* 463)



The "Holmes Beech" at Darien, Connecticut

New king of the slippery elms, at Willoughby, Ohio

War News from Italy

—broadcast by the transmitter you might have had!

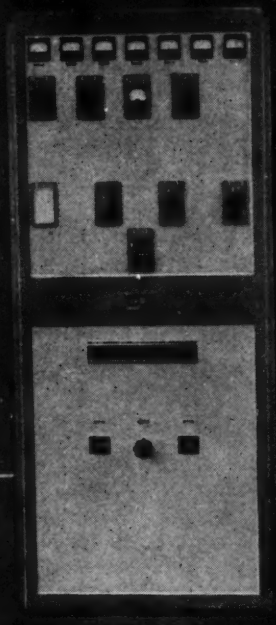
When the Allies invaded Italy the War Department asked RCA Communications, Inc., to build and operate a complete new radio station in Italy.

Men and material were rushed overseas to the Italian site. Night and day RCA engineers labored — the flash of big guns lighting the night horizon.

In 43 days the new station ICA was on the air. On February 1 it began sending America spot news from the Italian front. A notable transmission was the first broadcast from the Anzio beachhead (which was picked up from a low-power transmitter on the beachhead and relayed directly to the U.S. by Station ICA).

The two transmitters installed at ICA are RCA Police Transmitters — the type employed for emergency communications in many American communities. Except for the war your community might be using one of these very transmitters today.

This incident may help you to understand why RCA cannot supply equipment for civilian emergency communications requirements now. But when this war is over, RCA will be in a position to furnish better equipment than ever before. Moreover, RCA engineers will help you right now to plan an effective emergency communications system for postwar installation.



RCA Transmitter used by station ICA

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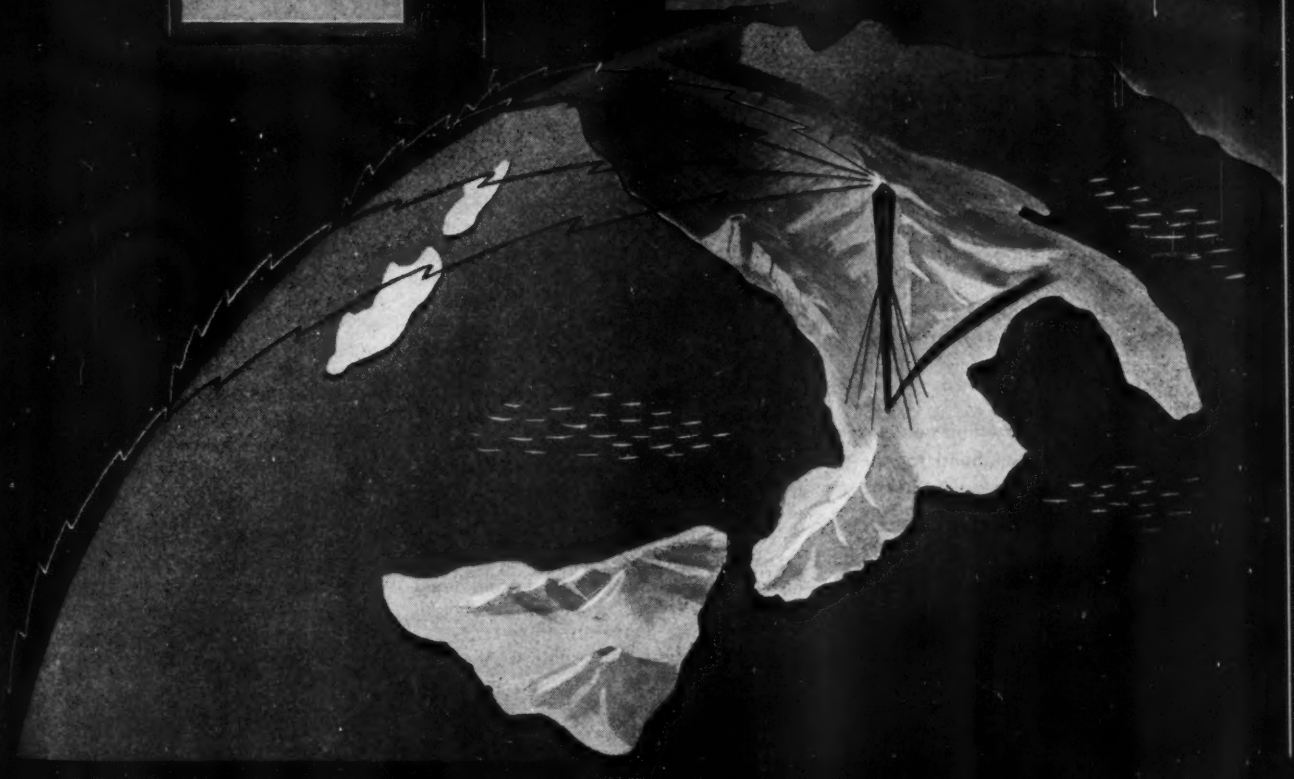

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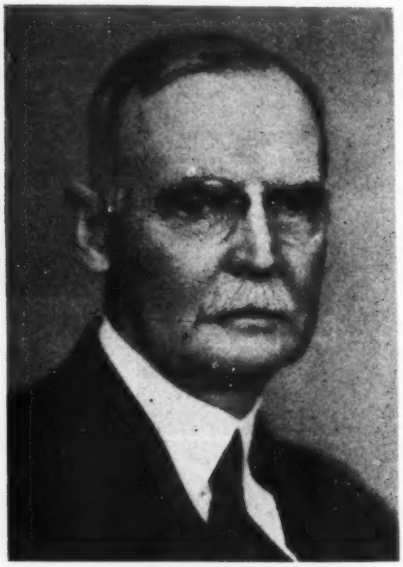
Herbert A. Smith, Pioneer in Forestry, Dies

By HENRY S. GRAVES

HERBERT AUGUSTINE SMITH, one of the stalwart pioneers of American forestry, passed away on July 21, at the age of seventy-eight years. Though not a technically trained forester, but a writer, editor and historian, he occupied a unique place of influence in the profession and his contribution to building up and advancing the interests of forestry in the United States were beyond measure.

Herbert Smith was a graduate of Yale College in 1889, a classmate and close friend of Gifford Pinchot. He took his Ph.D. degree at Yale in English and later served on the faculty of that Department until 1898. Then he devoted two years to study at the Sorbonne in Paris and to editorial writing.



Herbert A. Smith

When Gifford Pinchot began materially to expand the activities of the federal Bureau of Forestry, there appeared clear need of an associate skilled in writing and editorial work. He turned to Herbert Smith, who joined the staff in 1901. Thus began Smith's career in forestry. He not only served as a writer and editor, but he soon acquired wide knowledge of forestry in its varied aspects, grasped the problems of the public lands, and the complex background of problems centering around the establishment and development of the National Forests. Through close association with foresters in various fields of work he became familiar with technical problems and could himself qualify as an expert in silviculture and other features of forestry.

When Herbert Smith entered the government service there was little knowledge about forestry or interest in it on the part of the general public. It fell to him to supervise the issuance of information to the public regarding forestry and the work of the Forest Service. This was in addition to his functions as editor of reports, bulletins, and other publications. Since his retirement from the Forest Service in 1937, he had been working, with Gifford Pinchot, on a history of forestry.

He had exceptional ability in analyzing and appraising public situations and problems. He had rare judgment in matters of forest policy and administration. He constantly was brought into consultation in perplexing situations when Gifford Pinchot was Forester. During my own term in charge of the Forest Service, Herbert Smith was one of my closest advisers.

It is impossible to measure his real part in shaping policies, meeting emergency situations, guiding expression of formal public statements, and enrichment of form and context of publications issued by the Forest Service during his connection with the organization.

During the years 1935 to 1937 he served as Editor-in-Chief of the *Journal of Forestry* of the Society of American Foresters. His editorials during this period, together with the various bulletins and articles written by him, constitute a substantial contribution to our forestry literature. Very important also was his part in preparation of official reports and other documents which did not bear his name. His services in forestry were recognized by his election as Fellow of the Society of American Foresters in 1938.

Among my most precious memories was the trip that Herbert Smith, Gifford Pinchot and I took through the western forests in 1937. We received a royal reception by forest officers and others, and we were given an exceptional opportunity to see the progress of administration and development of the National Forests since their establishment. I know that the trip was an event of great significance and satisfaction to Herbert Smith, as it was to Gifford Pinchot and myself. There were long discussions in review of events of the early days, interpretation of practical problems in the woods, critical appraisal of success and of shortcomings, and forecast of possible new steps forward in forestry.

Herbert Smith was widely admired for his intellectual traits and accomplishments. He had a host of friends who loved him for his loyalty, generosity, sympathy and faith. His was a rich life. His name will stand high among those who shaped the destiny of forestry.

FOREST USE WITHOUT ABUSE

The above picture shows several mature Ponderosa Pine trees that have been killed by pine beetles. It illustrates one of nature's ways of "harvesting" the old crop to make way for the new. Each year nature harvests one-sixth as much timber as man. But timber crops harvested by nature contribute nothing to the welfare of the nation. True forest conservation requires forest use, and forest use without abuse is forest conservation in its finest and most beneficial form.

In ever increasing numbers, forest industries are practising true forest conservation. They harvest mature timber and put it to beneficial use while the methods of harvesting are so performed as to provide for the continued growth of timber on the land.

We are proud of the contribution our forest lands are making to the winning of the war and also proud of the fact that this essential wartime service is rendered without undue sacrifice of the future productivity of the forest.

WEYERHAEUSER

JOHN KIERAN'S NATURE NOTES, by John Kieran. Published by Doubleday, Doran and Company, Inc., New York, N. Y. 112 pages. Illus. Price $1.50.

In this delightfully written little book, John Kieran, of "Information Please!" fame, exemplifies his profound love of nature with interesting facts on wild flowers, insects, birds and animals. The result—a collection of "Nature Notes" which are informative and entertaining as well. The book is interestingly illustrated by Fritz Kredel, artist.

CANADIAN RESTORATION, by E. Newton White. Published by Bruce Humphries, Inc., Boston, Mass. 227 pages. Price $3.00.

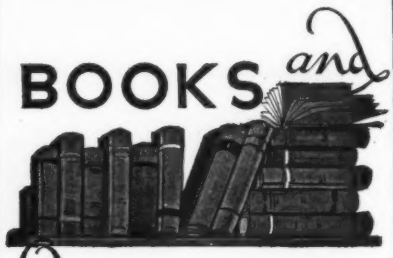
This book is another of those flooding the market today devoted to the postwar era, but it has real significance because it ties directly in with the great postwar conservation plans of Canada. The tremendous task of rehabilitation and reconstruction facing the world requires in its execution the application of practical conservation. Realizing this, Canada is already planning the most complete development and utilization of her rich natural resources, to the end that those who have given so much shall receive in proportion to their effort. In the conservation of her natural resources lies one of Canada's greatest potential reconstruction forces, and this important book makes clear what must be done.

MANKIND SO FAR, by William Howells. Published by Doubleday, Doran & Co., New York, N. Y. 319 pages, illustrated. Price $4.50.

Impressively written by a noted anthropologist, this account of the emergence of man from the earliest prehistoric types is not only exactly scientific in fact but is highly readable as well. Illustrated with fifteen full pages of halftones and many line drawings, this is the fifth in the American Museum of Natural History Series and is a valuable addition to the literature of the history of man.

SENECA INDIANS—HOME LIFE AND CULTURE. Published by The Conservation Society of York County, N. Y. 125 pages, illustrated. Price $1.75.

The title describes the content of this interesting book, recently published and sponsored by the Conservation Society of York County. The material was collected by the archeologist of the Society, Gerald E. Fenstermaker, and embodies first-hand information which throws a clearer light on the lives of these fine people—the Senecas—their legends and spiritual aspirations. Fine photographs and good line drawings add to its interest.



OTHER PUBLICATIONS

A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

ALONG NATURE'S HIGHWAY, by Carroll Lane Fenton. Published by The John Day Co., New York, N. Y. 96 pages, illustrated. Price $1.25.

This book is a real introduction to many of the trees and flowers, insects and birds as well as other creatures of the woods you may meet on the road. For Dr. Fenton describes over one hundred of them and has made many attractive drawings, which will assure their identification.

SO LONG AGO, by E. Boyd Smith. Published by Houghton Mifflin Co., Boston, Mass. 35 pages, illustrated. Price $2.00.

A fascinating account for Bobby—and all the other little Bobbies—of the beginnings of life in this wonderful world we know—from the tiniest of the prehistoric animals to the great Brontosaurus and down to the zoo animals of today. And one of the nicest things about this book is that the author has made seventeen pages of paintings in full color of all these strange creatures and, on the facing page, is a clear line drawing—without color—of the same subject, so that Bobby may color it with his own paints. A really delightful book for children.

TREE RING ANALYSIS AND DATING IN THE MISSISSIPPI DRAINAGE, by Florence Hawley. Published by the University of Chicago Press, Chicago, Illinois. 132 pages, illustrated. Price $1.50.

Started in 1934, this is a study of tree-rings as a means of establishing exact chronologies in the mound-builder area of the Mississippi Drainage and is a definite and valuable addition to the literature of dendrochronology.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Littoral Vegetation of the Lakes on the Huntington Forest, and *Annotated List of the Mosses of the Huntington Forest,* by Harold F. Heady and *Ruffed Grouse Management,* by Ralph T. King. Roosevelt Wildlife Forest Expt. Sta., N. Y. State College of Forestry, Syracuse Univ., Syracuse, N. Y.

The Mahogany Book, by George N. Lamb. Fourth Edition. Published by the Mahogany Association, Inc., 75 East Wacker Drive, Chicago, Ill.

Georgia Forest Resources and Industries, by A. R. Spillers and I. F. Eldredge. Misc. Pub. No. 501. For. Serv., U.S. D.A. Supt. of Docs., Wash., D. C. Price 25 cents.

Forest Resources of Coshocton County, Ohio, by Gerald W. Crowthers. Report No. 21, Ohio For. Survey. Ohio Agricultural Expt. Sta., Wooster, Ohio.

The Use of Fire in the Protection of Longleaf and Slash Pine Forests, by C. A. Bickford and John R. Curry. Oc. Paper No. 105, Forest Service, U.S.D.A. Sou. For. Expt. Sta., New Orleans, La.

Preliminary Estimate of 1942 Lumber Production in the Carolinas, Virginia, West Virginia, Kentucky and Tennessee, by Ardie D. Toler. For. Surv. Rel. No. 14. A Forest Progress Report. Forest Service, U.S.D.A. App. For. Expt. Sta., Asheville, N. C.

Paul Bunyan's Quiz. Booklet published by American Forest Products Industries, Inc., 1319 Eighteenth Street, N. W., Washington, D. C.

Teco—Design Manual for Teco Timber Connector Construction. Published by the Timber Engineering Company, 1319 Eighteenth Street, N. W., Washington, D. C.

Forest Statistics for Tillamook County, Oregon—For. Surv. Rep. No. 90, and *Forest Statistics for Yamhill County, Oregon*—For. Surv. Rep. No. 91. Forest Service, U.S.D.A. Pac. Northwest For. and Range Expt. Sta., Portland, Oregon.

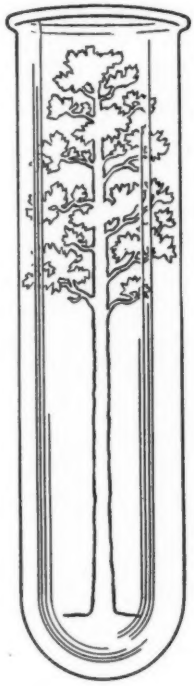
Bibliography of Agriculture—Sec. E, Forestry. Librarian, U. S. Dept. of Agr., Wash., D. C.

The Peats of New Jersey and Their Utilization, by Selman A. Waksman, H. Schulhoff, C. A. Hickman, T. C. Cordon and S. C. Stevens. Geol. Series, Bull. 55, Part B, Dept. of Conservation and Development, Trenton, N. J.

WOOD PLASTICS

PLASTICIZERS AND CHEMICALS

A REPORT ON NORTH CAROLINA'S RESOURCES



FROM the tidewater swamps of the Atlantic to the towering ridges of the Great Smoky Mountains, there stretches a huge forest: the State of North Carolina, offering rich raw materials to the PLASTIC INDUSTRY.

Centuries ago this forest attracted the first white settlers. Their descendants cleared some 40 per cent of the land for crops and industrial settlements and drew on the tree substance to build up, among other forest industries, one of the world's finest and largest furniture centers.

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North Carolina's tremendous forest reserves, plus annual natural growth of more than 10,000,000 cords of sound wood, plus cheap hydro-electric power, together with geographic location favorable to the largest Eastern markets, offer a golden opportunity to the manufacturer who would see his plywood, fiber wallboard and other PLASTIC products in the homes and offices of the World of Tomorrow.

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An annual sawdust pile of more than 500,000 tons will provide the raw material, at waste product prices, for turning out phenol-formaldehyde, wood flour and lignin for plasticizers . . . the miracle of chemical decomposition can be put to work to produce wood sugar for feeding yeast and wood alcohol.

Industry seeking the right location for establishment of a *Destructive Distillation Plant* for the manufacture of methanol and acetic acid and wood tar derivatives will find it here where raw materials are abundant.

- - -

Write today for information about North Carolina resources: mica, clay, asbestos, silica, soya bean and coal, as well as forest. Address Commerce and Industry Division, 3246 Department Conservation and Development, Raleigh, N. C.

NORTH CAROLINA

The Mormon Cricket War

(*From page* 439)

ming, Utah, Nevada, Oregon and Washington. He moved into the grain fields, gardens, meadows and grazing lands of the first settlers. In 1848 he attacked the Mormon settlements in Utah in overwhelming swarms and thus got his common name, Mormon cricket. His scientific name is *Anabrus simplex*, Hald. Throughout the last of the nineteenth century, this pest was lurking in his breeding and hatching grounds somewhere outside the settlements, waiting Indian-like to make his raids.

The Bureau of Entomology points out that other species of agricultural insects actually cause more damage than the Mormon cricket, but no other is so much dreaded. Some idea of the uncountable number of crickets in a serious infestation may be had from a little story from Pine Valley, Nevada, which had a cricket invasion in 1882: "Trains were unable to run on the main line here, because the rails were so slick from the millions of Mormon crickets that had been crushed that the drive wheels could not get traction."

Of the 1938 migrations, the Nevada State Department of Agriculture tells of the paved highway near Elko, Nevada, "being endangered to travel by Mormon crickets to such an extent that signs had to be placed warning motorists to drive slowly. The crickets crushed by passing cars made the road very slippery and several serious accidents occurred even after the roads were posted. As near as possible the highway was kept clear of crickets by sheet iron barriers . . . ." One of the 1938 bands was reported to be a black moving mass that covered the ground on a front twelve miles wide and the egg beds were found to be several miles square.

The crickets move in single file, like sheep, each following the other. But a band will be made up of hundreds of columns. They advance slowly, less than a mile a day—a dark, crawling, hopping mass—for they cannot fly. Before cricket warfare became modern and efficient, ranchers in the path of their migrations were forced to resort to every means they could devise to stop, kill or divert the crickets from their fields, meadows, gardens and ranges. Failure to stop them might mean ruin and near starvation—grain fields devoured; alfalfa left a meadow of bare stems; truck gardens wiped out; the carrving capacity of the range, made worthless because though the forage plants are not devoured, livestock will refuse to stay on a range with large numbers of these insects.

Little wonder then that the western farmer and rancher fears the Mormon cricket and that the fight against the insect has been part of the drama of the winning of the West.

There have been bad cricket years just as there are bad forest fire, drought or flood years. The Bureau of Entomology records the bad cricket years in eleven western and Rocky Mountain states as 1900 through 1904, 1914, and 1935 through 1939. In recent years great damage has been done both to range lands and to grain and hay crops. A Nevada state bulletin estimated that in 1938 approximately 5,438,460 acres of range land were damaged to an average extent of twenty-seven percent.

A study of the feeding habits and range damage by Mormon crickets showed that they feed upon more than 250 kinds of range plants. If the insects are not controlled on a range they not only devour the stock feed but can do great permanent damage for they will eat the seeds and prevent the native forage plants from reseeding. A Forest Service range inspector told the author that he had seen good range forage after a heavy cricket infestation and that it looked as though a huge band of sheep had been kept on a small range for an entire season.

The men who have fought and studied the cricket have learned a great deal about him. They know that wherever he has once struck he may strike again, for his hatching grounds are likely to be nearby. They know that it is cricket nature to migrate, that he will move away from the egg-laying grounds in search of food and shelter until the egg-laying period arrives, then move back to permanent egg-beds and out again.

The bands may move in the direction of grain fields and gardens and meadows, or they may go in the opposite direction where the feed is poor. Their movements are governed largely by the weather. On clear or partly cloudy days they are on the move if the air temperature is from about sixty-five degrees to ninety-five degrees F. If it is too cool they stay in a sheltered place. If the air temperature is more than ninety-five degrees, the soil temperature is likely to be 125 degrees or more and that is too warm so the crickets climb into the tops of grass, weeds or shrubs where the air is cooler. If the wind reaches a velocity of more than twenty-five miles an hour, migration stops.

Most of the earlier methods used to control or destroy the pests are being abandoned in favor of the *sodium fluosilicate* poisoned bait. Under certain conditions, however, as in the protection of gardens, water supplies or other highly valuable areas, metal barriers over which the insects cannot climb are still used.

Oil is also a cheap and effective method of control if there are irrigation ditches or streams in the infected area. Barrels of oil are placed at intervals over the ditches or streams, and the oil dripping from a small opening in the barrel onto the water surface forms a film that is a death trap to the insects. Mormon crickets never hesitate to plunge into any stream or ditch in their path and if the water surface is not treated they may, in a wide and swift stream, be carried for miles and infest new areas.

Another interesting thing that the experts have learned is that crickets have many natural enemies who help in the fight against them. Blackbirds, meadow larks, magpies, robins, hawks and crows follow the crickets and raid the egg grounds. Blackbirds sometimes attack and kill the female crickets, then remove the eggs. Following a large cricket band they find an easy source of food. Mice, chipmunks and squirrels also mine and eat the cricket eggs. Black wasps attack individual crickets. After the sting of the wasp has paralyzed the cricket, the female wasp lays her eggs on the body and buries it so that the larva stage of the young wasp can feed on the dead insect. At Honey Lake it was found the cricket has larger and more formidable enemies. Both bears and coyotes followed the slow moving bands and fed upon them.

The Mormon cricket's greatest enemy however is man, and the days of the desperate isolated rancher or farmer fighting alone to save his crops and range from the devouring hordes has about passed with other oldtime frontier drama. For Mormon cricket control is now the business of organized agriculture—county, state and federal.

MAJOR USFS TRANSFERS

Three major changes among the directors of the forest and range experiment stations operated by the U. S. Forest Service have been announced.

Elwood L. Demmon, director of the Southern Station at New Orleans, will become director of the Lakes States Station at St. Paul, Minnesota, succeeding Dr. Raphael Zon who retired in August.

Charles A. Connaughton, director of the Rocky Mountain Station at Fort Collins, Colorado, since 1938, will become dierctor of the Southern Station.

Dr. Irvine T. Haig, Forest Service research scientist who recently headed a technical forest mission to Chile, has been named director of the Appalachian Station at Asheville, North Carolina, succeeding Richard E. McArdle, named assistant chief in charge of the Division of State and Private Cooperation in Washington.

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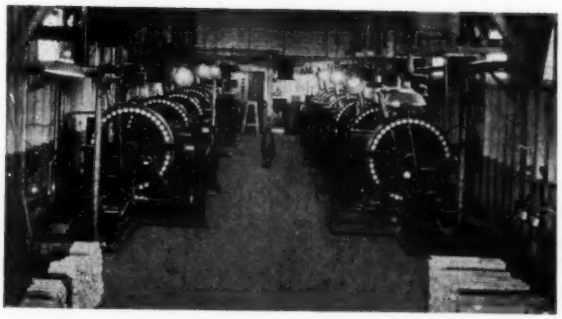

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The American Forest Fire Medal Board recognizes outstanding cases of personal heroism in forest fire fighting by awarding the Forest Fire Medal. The Board consists of a representative of The American Forestry Association, Society of American Foresters, Charles Lathrop Pack Forestry Foundation. Association of State Foresters, and the National Lumber Manufacturers' Association.

In order to establish this Award on a permanent basis, a fund or foundation of not less than $3,000 is necessary. Cash balance on hand totals $2,757.11. Your assistance in completing this fund is invited. It is believed that foresters, forestry, park, and all forest protection associations, as well as other conservation groups, will welcome the opportunity to contribute. Contributions should be sent to:

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James G. K. McClure Honored

JAMES G. K. McCLURE of Asheville, North Carolina, president of the Farmers Federation, and from 1937 to 1940 president of The American Forestry Association, has been honored by the National Institute of Social Sciences for "bringing hope and courage to the farmers and youth of America." A gold medal was awarded Mr. McClure for his work in organizing the Farmers Federation and in creating the "Lord's Acre" movement among rural folk.

James G. K. McClure

The honor is one of a number that have come to the Association's eighteenth president in recent years. In 1937 Yale University, from which he was graduated in 1906, bestowed an honorary master of arts degree on him, and in 1941 the same honorary degree was given him by Harvard University.

Mr. McClure's work in aiding the people of the Blue Ridge Mountains of North Carolina to make a better living began a quarter of a century ago with the formation of a cooperative movement of mountain farmers called the Farmers Federation. Starting with one small warehouse, the organization has grown until today it is operating eighteen warehouses in twelve mountain counties. It also manages many farm operations and industries, among them a forest products department. This was started to encourage the maintenance of forests on steep lands to prevent erosion and to yield income to the mountain farmer. The department serves also as a sales organization for the farmers in marketing fence posts and rails, hand-split shingles, chemical and acid woods, pulpwood and miscellaneous forest products. The work of the Federation has given tremendous impetus to agriculture in the state, uniting the efforts of the farmers into a strong, cooperative power.

Interested in conservation from the beginning, Mr. McClure has given much of his time and energy to furthering the movement. He became a director of The American Forestry Association in 1933, and was elected its eighteenth president in 1937. Serving four terms, he retired in 1940 because of heavy responsibilities in connection with his Farmers Federation work, but remained as a member of the Board of Directors until 1943. He is now a vice-president of the Association.

Master Farmer

(*From page* 445)

Another sandy knoll, just south of the white pine planting, also proved a liability when put in annual crops, so Mr. Salisbury decided to try out some hardwoods. Thrifty white oak stock from the nursery of the New York State College of Agriculture was furnished in 1926. The knoll was plowed and fitted as if for corn, and the oaks planted every eight feet in rows eight feet apart, with tuliptrees as a filler. Today, less than twenty years later, many of the oaks are over five inches in diameter. Without question, it is the finest planting of white oak to be found in the state. An adjacent block of red oak is equally thrifty.

Between the oak and pine, spruce has been planted compactly to cut as Christmas trees. During the last half decade about $100 a year has been realized from the sale of these trees.

It has been suggested that perhaps $3 an acre a year is a satisfactory net income from land on farms which is set aside and wisely used in producing forest products. On this basis Mr. Salisbury should receive annually from that part of his farm in forest a yearly return of $150 since he has fifty acres in natural woods. For the forty-three years that he has been operating his farm, that would mean a total of $6,450. How, then, does Mr. Salisbury's actual net return for a decade compare with this potential?

Here is the record: 1,075 standard cords of fuelwood at $4 a cord, $4,300; 150,000 board feet of sawlogs at $15 a thousand feet, $2,250; and 25,000 feet of tulip (1943) at $56 a thousand feet, $1,400. This totals $7,950.

While $4 a cord is too low a figure for the last five years, it is deemed average for the forty-three years for a fuel supply located on the outskirts of a village.

Thus the net return has been much nearer $4 an acre a year. At the same time, it should be remembered, the fifty acres have been maintained in a thrifty, productive condition, and have been a backlog for the use of labor whenever it was not needed on plough land or orchard.

As Mr. Salisbury expresses it: "In normal times, I have been able to keep my men on a year-round basis because of the winter work in the woods." Other orchardists without such a reservoir have to let their help go once the winter pruning is done.

Official U. S.
Signal Corps Photo

Let these guys start it!

There's a day coming when the enemy will be licked, beaten, whipped to a fare-thee-well—every last vestige of fight knocked out of him.

And there's a day coming when every mother's son of us will want to stand up and yell, to cheer ourselves hoarse over the greatest victory in history.

But let's not start the cheering yet.

In fact, let's not start it at all—over here. Let's leave it to the fellows who are *doing* the job—the only fellows who will *know* when it's done—to begin the celebrating.

Our leaders have told us, over and over again, that the smashing of the Axis will be a slow job, a dangerous job, a bloody job.

And they've told us what our own common sense confirms: that, if we at home start throwing our hats in the air and easing up before the job's completely done, it will be slower, more dangerous, bloodier.

Right now, it's still up to us to buy War Bonds—and to *keep on* buying War Bonds until this war is completely won. That doesn't mean victory over the Nazis *alone*. It means bringing the Japs to their knees, too.

Let's keep bearing down till we get the news of final victory from the only place such news can come: the battle-line.

If we do that, we'll have the *right* to join the cheering when the time comes.

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Over the Pass

(*From page* 434)

through" the range, driving their flocks to summer pastures from both the San Joaquin and Owens valleys. And they, in many instances, must have found the passes used by Indians who, in turn, had found them by following the game trails over the range.

It is certain that the immortal John Muir, great mountaineer, scientist and nature lover, traveled many of the present-day Sierra passes long before there was any real semblance of a trail. Thus it is fitting that today there is a direct route high-altitude John Muir Trail connecting Mt. Whitney with Yosemite Valley, a distance of perhaps 100 miles through the most magnificent alpine scenery in the country. At least ten passes on the Muir Trail are from 10,000 to above 13,000 feet above sea level. In Muir Pass, 12,050 feet elevation, stands a rest house of rough granite, a monument to this beloved pioneer.

When the war clouds have rolled away and the call of the high passes is heard again, the country John Muir loved so well will be known by many, and kept inviolate as a priceless heritage.

The Anthracite Region Discovers Its "Surface"

(*From page* 427)

made of them to enlist the school children in keeping the forests green.

To Luzerne County, however, must go in recent years the palm for forestry leadership. Here again it is a culmination of the effort of many. Twenty years age Gilbert McClintock, an influential lawyer of Wilkes-Barre, saw in a boy scout of the little nearby coal town of Glen Lyon the qualities of leadership. The son of a respected miner, the scout was interested in the living things above ground—wildflowers, trees, and the creatures of the woods. To sharpen and guide this interest, Mr. McClintock gave the lad a collection of forestry books. He was then working in the mines of the Susequehanna Coal Company, learning in a grim and dangerous school where the slow-thinking worker has a short career, the lessons of alertness, self-reliance, and thoroughness. His thoughts were of the 5,000 acres of land, most of it in woods of a sort, which comprised the coal company's "surface." As far back as he could remember these woods had burned over periodically, the miners and their families had "borrowed" kindling wood and Christmas trees from them, and no one, least of all the owners, had regarded them as actual or potential assets.

After seven years in the mines, this boy, now a young man, went to the superintendent, and boldly laid before him a plan for reducing the heavy expense of policing this surface. The essence of his plan was to make the people of the town partners, as it were, in the ownership of the woods and idle land that surrounded them on all sides. Let the company respect its own property, he argued, and the community would share the respect. The details impressed the superintendent, who hired him, at a modest wage, to carry out his plan.

I can only illustrate, not describe in detail, the methods which young Stanley Mesavage used in his next five years as firewarden and forester for the company. He knew that most fires resulted from the carelessness of local men and boys who, eluding the company guards, hunted, picked berries, or merely hiked for pleasure on company land. Mesavage let it be known that the company no longer objected to this trespass, if only the trepassers didn't start fires, cut green trees, or otherwise lessen the prospects for a future crop of mine props. Hereafter, all a man or boy needed to go anywhere on company land was a permit, which Mesavage would issue without charge or delay.

Christmas trees could be cut for family use from designated areas, also bean poles for the home garden, and dead trees for kindling. You could camp on company land, trap muskrat and skunk, or hunt rabbits and deer, as long as you had a permit. The permit was accompanied by a friendly request not to abandon camp fires until they were out, and to report all forest fires. Building on boy scout enthusiasms, Mesavage organized an efficient village crew for fighting the dwindling number of fires

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that did start. Within five years the annual bill of about $5,000 which the company had been accustomed to pay for fighting fires on its property had been reduced to next to nothing.

One of the great difficulties in mining anthracite is keeping water out of the mines. Some of this water enters from subterranean streams, the rest from surface run-off. Whatever the source, millions upon millions of gallons of it must constantly be pumped out of the mines, and carried into the rivers of the region. Flumes and other engineering works for diverting surface streams from the mines are effective, but costly. Mesavage had read in his books how a well-stocked forest retards the downward movement of rain and melting snow, even on steep slopes. He persuaded the company to let him plant trees on sparsely-wooded hillsides, and particularly around mine shafts and tunnel mouths, where he had observed that muddy torrents furrowed the bare ground and poured into the mines.

And on an eroding field right in the center of Glen Lyon he interested the school children in planting trees. The trees were actually bought with their own hoarded pennies, when company vision did not extend to financing the project, even on its own property. That plantation is today a pride of the town. Mesavage's pride is rather in the plantation of locust trees on a mine refuse bank towering above the main street of Glen Lyon. Most foresters would have said trees could not grow there, but Mesavage went ahead and grew them!

The second and concluding instalment of Mr. Forbes' article will appear in the October number of AMERICAN FORESTS.

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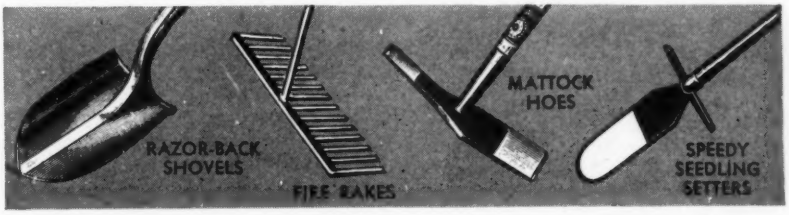

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Hands Across the Border

(*From page* 431)

limited duration. Secondly, these lands, more or less wrecked already, offer one of the best opportunities in the country for constructive rehabilitation in times of unemployment; they were so used on a large scale during the depression of the last decade. But, above all, there is an insistent demand from all over the country for protection of the rare recreational values of this historic and health-giving region. In spite of the worst that has happened so far, the lakes are for the most part still wild and beautiful and a perfect refuge from the stress of modern life.

Quetico Park has been the goal of most of the travel to the area. Superior National Forest is the entry to the still wilder and more intricate waters of Quetico. There has been no comparable demand for protection from the Canadian people. The population near the Quetico area is comparatively small and well provided with outdoor facilities close-by. So far as recreational uses are concerned, whatever is done by the Province of Ontario must be with a view to the benefits to be derived from visitors from the United States rather than to the similar needs of its own citizens.

There has been the same waste, the same disregard of intangible values, the same threatened exhaustion of resources in Ontario as in Minnesota. From any fundamental economic point of view there is the same need for protection and restoration. There is just one important difference: Ontario owns all its own lands. There is no complication of private ownership. There would be no costs for lands. If and when the Province sees fit to extend the present Quetico Park to include the rest of the lakeland, all that is necessary is an Order in Council. The Province would then be in position to apply the principles of the Quetico-Superior program to the whole area.

Neither are new roads or other man-made developments desired by the outside public. Quite the contrary; nothing destroys the wilderness quicker than a road through it. So there would not need to be any expense for these. The region as a whole already has excellent roads of access at Fort Frances, Port Arthur and Fort William and all along the Trans-Canada highway on the north. In addition, it is bisected its whole length by the old Canadian Northern Railway, now a part of the Canadian National. Whatever fixed expense the Province might have therefore would be limited to fire protection, game patrols, and general policing, most of which are essential at present in or out of the Park. The costs therefore of initiating and maintaining Ontario's share of the program would appear to be extremely light.

There remains the question of economic benefit to Ontario. Setting aside the eventual gains from increased volume of timber, fur, fish and game, the tourist trade has unlimited possibilities. At present the largest part of the visitors to Quetico Park go in by way of small towns in Minnesota without passing through any similar communities in Ontario. The only revenue therefore is from Park permits and fishing licenses. This would be very different, however, if the Park were extended to include the rest of the watershed. That would place Fort Frances, Fort William, Port Arthur, and all the communities on the Trans-Canada highway and along the Canadian National Railway at the door of Quetico. It would proclaim to the public that the recreational attractions are not confined to the present Quetico but are to be found, often in higher quality, all over the lakeland. Many thousands of visitors have already discovered that fact and are entering through Canadian communities; but the majority, seeing Quetico Park outlined on the map, imagine that they would be disappointed elsewhere.

The lakes closest to these communities and to existing roads and railways would be logical zones for camps of all sorts, summer homes, hotels, and other facilities for the public. The program definitely contemplates zoning on a vast scale for the whole area, so that provision can be made not only for sanctuaries and wilderness areas, free from any development, but also for the many kinds of recreational use that will be required. There is already a large investment of this sort all through the area; and it is growing rapidly. It includes homes, resorts, hotels, boys' camps. Yet the development is unquestionably only in its infancy. One of the trends is toward camps for large industries, where workers can take turns at their vacations. There can be no doubt, judging from the attitude of visitors from the south, that the demand for all such locations and facilities would expand immeasurably, if it became certain that the patrons were assured that the surrounding area would be kept for all time in its natural state.

Enlightened self-interest therefore would seem to call for every precaution against impairment of these Canadian wilderness lakes, whether by damming, logging or any other form of exploitation that destroys natural conditions. This is above all true of the delectable

canoe waters along the Minnesota border. These lakes, more than any others, have won the deep attachment of the American public.

There are some fourteen Indian reservations in the proposed Quetico-Superior area. These Indians are among the finest remaining on the continent, living much the same as in the time before the white man. They are part of the wilderness scene. Moreover, they know how to make economic use of wild lands without depleting the natural reserves. Whatever is done, therefore, should certainly, I believe, foster the best that the Indians have to contribute, recognize fully their prior rights, and feature them in all the developments.

The Quetico-Superior program has the endorsement of a distinguished list of men and women in both countries. In addition, among the many organizations on record, the Canadian Legion and the American Legion—the national bodies of both—have long since asked that the area be dedicated as a memorial to the service men of both countries who served as comrades in World War One.

Who can doubt that when the soldier boys of today return home there will be greater need than ever for just such a pioneer venture both for recreation and for the task of rehabilitation? It looks as though we are passing through a transition period in conservation as part of the whole economy of life and are at last at a turning point. When the grim business of this war is over, shall we be content to return to the old exploitation that left nothing but waste lands and ghost communities? And for the same reason is it not likely that we shall have to look more and more to neighborliness among nations for a solution of many of our problems, not only of trade but of recreation and of every form of richer living?

The vitality of the Quetico-Superior program lies in recognition of these changing needs. The project is the outgrowth of careful analysis of a situation of startling immediacy, which extends beyond the boundaries of either country. It seeks to replace short-sighted wasteful utilization of natural resources by constructive planning in the public interest. It deals not merely with theories but with their practical application on a scale rarely attempted before.

The program has already gone a long way toward realization in spite of the unrelenting opposition of private groups insisting on their rights of unbridled exploitation. There are still those who would extract the last tree and the last drop of water! Yet the program has made steady progress on the Minnesota side.

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President Franklin D. Roosevelt himself created a special five-man Quetico-Superior Committee to speed its achievement. The chief need now is the consent of the Province of Ontario. Suitable representations have been made, both through voluntary groups and through official diplomatic channels at Washington and Ottawa. It is hoped that a favorable reply to the invitation from Washington will soon be forthcoming from Toronto and that the project may then be speedily consummated by the two governments in permanent treaty form.

That would mean a mid-continental lakeland preserve of ten million acres, the largest in North America, international in character though not in ownership, and different from anything elsewhere. It would lay down a balanced forestry program of vast dimensions in the public interest. At the same time it would forge a new community of interest between the two countries and set an example in the ways of peace and amity to all the world. The opportunity is there—a many-sided and far-reaching creative opportunity worthy of the best in both countries. As Thoreau once said: "If you have built castles in the air, your work need not be lost; that is where they should be. *Now put the foundations under them.*"

Canada's Postwar Tourists

(*From page* 443)

lished to preserve in their natural state areas of outstanding beauty or interest for the benefit of present and future generations, and as sanctuaries for wildlife. Except for small areas around administrative headquarters and hotels, the building of roads, trails, golf courses and similar facilities, wilderness conditions are maintained throughout these preserves. Exploration of the wilderness is a primitive instinct, and the opportunities to enjoy it are being continually reduced by the commercialization of the world. Canada's vast unsettled forest regions may, paradoxically, become one of the great assets of the nation.

Specifically, in addition to enlarging the number of parks, the Canadian government plans to build better arterial and secondary highways leading to these preserves as a postwar construction enterprise. For the aerial tourist every park undoubtedly will have a number of landing strips for light planes. There are to be improved highways within the parks, an undertaking which the government had started before Canada entered the war in 1939. The various parks now have motor camp as well as hotel accommodations, either under leased private management or under government ownership. Cheaper accommodation is to be made available in some of the larger parks for those of low incomes. This will include more bungalow and cabin camps in scenic settings, as well as hotels. Modern sanitation facilities and other conveniences are to be built at tourist camps and overnight camping spots.

To make it possible for the tourist's explorer instinct to take full advantage of the preserves, foot and horse trails, and canoe portages are to be constructed and marked. Hundreds of canoe journeys already have been laid out by the federal and provincial authorities, trails extending from the Arctic to the international border. These will be expanded in the postwar era, and so vast is the area covered in the parks that the canoeist will still be able to travel days at a time without seeing another human.

As a safety feature the government plans improved fire and game protection to meet heavier and more widespread use of the forests. Today there are thousands of miles of telephone trails connecting ranger cabins, and aerial forest rangers scan the preserves daily in season for signs of forest fire. Undoubtedly improvements in radio communication will be utilized in keeping a watch over the forests, some provincial governments already having announced plans for using walkie-talkie equipment when it is available for civilian use. In some forest areas shortwave radio communication between ranger outposts has been in use for a decade.

This postwar development is not only planned as an aid to building a bigger tourist industry, but also as a means of preserving and promoting better national health. It was found that recruits for the armed services during the war were not up to health expectations. So now the government plans to improve the national standard of health and one way will be by providing more life in the open, relaxation from regular routines, a change of environment, new interests and organized or unorganized exercise such as hiking, cycling, riding and mountain climbing. Canada will use her forests to bring recreational health to her own people and those of the neighboring nations.

Development of these preserves for a greater traveling public in the postwar period is also looked on in the Dominion as a means of providing work for war veterans, not only in the construction of highways, trails and other means of boosting tourist trade, but also in the operation of tourist centers, as forest rangers, guides, and the myriads of jobs pertaining to accommodating a traveling public.

Tree Trails

(*From page* 448)

corporation of the little township of Darien, where it has witnessed through two centuries many great changes and a great diversity of times. In 1744, when the tree was shooting its tiny roots into the rich soil, America was engaged in a great war—the third of the French and Indian Wars, commonly known as King George's War. Today it is witness to the greatest of all wars in the history of the world.

Recently dethroned in the Association's records of Big Trees was a slippery elm, *Ulmus fulva*, located on the Gaines property in Charlotte County, Virginia. Nominated in November 1941 by the late State Forester Fred C. Pederson, it has since been honored as national champion of its kind. In July of this year, however, Mr. C. M. Shipman, president of the Burroughs Nature Club of Willoughby, Ohio, wrote the Big Tree Editor concerning a favorite slippery elm that he has known for twenty-seven years. Almost three feet greater in girth than the Virginia elm, and thus the new champion *Ulmus fulva*, this monarch has a circumference measurement of fifteen feet, five inches, a spread of sixty-five feet, and a height of seventy feet.

Mr. Shipman, who is interested in the study of the raptorial birds and their nest life, reported that for many years a great horned owl nested in a cavity of a hollow branch at the top of this slippery elm, which grows in the valley of the Chagrin River near the town of Willoughby in Lake County, Ohio. The cavity, large enough to stand in, was made by lightning fifty or sixty years ago.

Although hunters of ginseng and golden seal have cut its bark for their "spring tonic," and the uppermost part of the trunk has been killed by lightning, life persists beneath its scars, and a mass of tree branches bedecked in summer foliage proclaim the vital, energetic force of this grand old tree "easily the largest in the valley."

A Forester Visits Paricutin

(*From page* 437)

ara Falls, but not constant. The noise lasted for several minutes, subsided and came again.

We walked a short distance to the face of the cold lava wall. It was like walking on a snow crust—a black crust, sinking in an inch or so, sometimes more. The pine trees in this region had all been boxed for turpentine about four feet above the ground. The ashes were drifted and in places covered the boxing marks on the trees. Of course, where the lava mass had reached trees, they were broken over as by a landslide. Many must have been entirely buried. The front of the lava field was quite precipitous to a height of forty to fifty feet and too steep to climb. It breaks up into deep fissures when it cools and steam was coming from numerous holes. The general color of the lava is dark red or black, but in places the presence of sulphur makes it yellow. All this time it was raining hard where we were, but the surrounding mountains were covered with new snow.

We drove on to the abandoned village of San Juan Parangaricutiro, which had housed 3,000 people a year before. Now it is a ghost town except for a few Indians who have remained to rent horses to tourists, as all the fields are destroyed for miles around. Over ten square miles have been covered either with lava or ashes. The Government is attempting to salvage the dead pines for railroad ties or box shooks. The trees are sold to the natives at a low stumpage price. From the village we went on by horseback, and after climbing for a mile or so passed through the obliterated streets of the small village of Paricutin where all the roofs were broken by the weight of ashes. Altogether we rode about four miles, always climbing; and getting nearer to the great black cone. Looking

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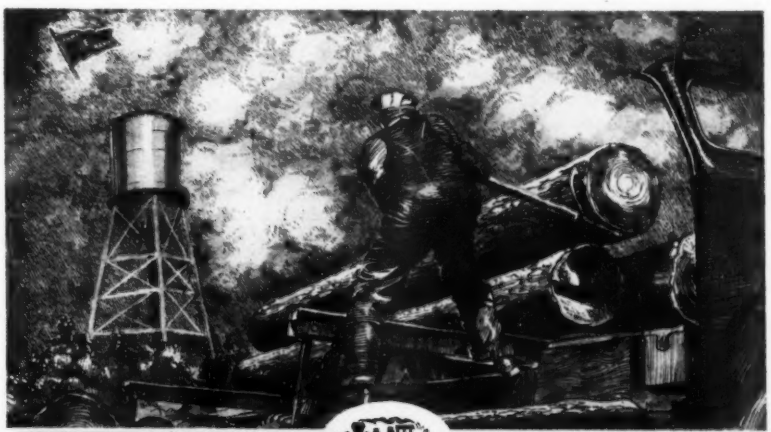

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back over the hillsides everything was black as far as we could see, with here and there clumps of dead trees.

The volcano was not as active as usual. Only a wisp of smoke was visible at the edge of the crater, but a few thousand feet above the gases from the crater condensed when they reached the cold air, and made great black billows of smoke like those in a burning pine forest. Some American geologist had recently climbed nearly to the top and planted a banner which we could see. We did not go on to the volcano, but skirted around on surrounding ash covered hills and finally dismounted, tying our horses to the stubs of dead trees at the edge of another lava field. Fifteen hundred feet away was the great stream of molten lava.

Seen from the same level, it resembled a tremendous red and orange serpent, undulating and moving quite rapidly like a snake over the surface of the cold lava. This stream comes from six new craters, which have opened since October at the base of the main cone. The first one formed is called the Sopicho, the Tarascan word for boy. All six craters were spouting fire intermittently and occasionally there would be a big explosion. We remained until dark and had a cold, wet ride back. As everything else was blacked out, the sky over the volcano remained lighted up from the reflection of the glowing lava on the clouds.

According to the latest measurements, the volcano is now about 1,400 feet high above the farm land where it originated, which makes the summit 8,700 feet above sea level. The government has reestablished many of the inhabitants of Paricutin on land in the nearby village of Calzontzin. It is nearly two centuries since a volcano has been born in North America and I felt that I had been fortunate in seeing Paricutin in its infancy.

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Western Ways Photo—by Livingston—The front cover.

WHO'S WHO
Among the Authors in this Issue

REGINALD D. FORBES (*The Anthracite Region Discover Its "Surface"*), consultant forester, writes from Ambler, Pennsylvania. A Yale man, for twelve years he directed the work of federal forest experiment stations in the South and the Allegheny area. He discusses here important developments in the forestation of the "surface" in the anthracite coal region.

ERNEST C. OBERHOLTZER (*Hands Across the Border*), Harvard '07, has made himself the recognized authority on the far-flung lakeland that forms the Minnesota-Ontario boundary. For thirty-five years its woods, waters and wilderness resources have been his first-hand study. He has lived in the wilderness the life that he preaches, and he has struggled unceasingly for the survival of America's wilderness and wildlife. Since 1927 he has served as president of the Quetico-Superior Council, is a member of the President's Quetico-Superior Committee created by Executive Order in 1934 and was one of Bob Marshall's chosen founders of The Wilderness Society.

CLAUDE KREIDER (*Over the Pass*), Westerner by adoption, has a deep love for the mountains and writes from his lifelong knowledge of the High Sierra of Nevada and California. Trail rider, climber, hunter and fisherman—this is his country.

AUSTIN F. HAWES (*A Forester Visits Paricutin*), New Englander, Yale forester of the class of '03 and widely known as State Forester of both Connecticut and Vermont, recently retired. Since then he has been traveling and writing, and lately spent some time in Mexico.

JOHN CLARK HUNT (*The Mormon Cricket War*), native Kentuckian, is attached to the Greenville Ranger Station in California. Expert in forest protection and conservation fields, his writing is widely known.

JAMES MONTAGNES (*Canada's Plan for the Postwar Tourist*), an old newspaper man whose work is well known both here and abroad, has been free-lancing since 1928 and writes from Toronto.

J. A. COPE (*Master Forest Farmer*), Yale forester of 1914, is just completing his 20th year as Extension Forester for the State of New York. Author of a complete series of farm forestry bulletins and important miscellaneous papers, his hobbies are growing Christmas trees on his forty-acre farm near Ithaca and teaching camping and woodcraft to lovers of the outdoors.

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